SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2076.—VOL. XLV. LONDON, SATURDAY, JUNE 5, 1875. PRICE (WITH THE JOURNAL) SIXPENCE. PER ANNUM, BY POST, £1 4s.

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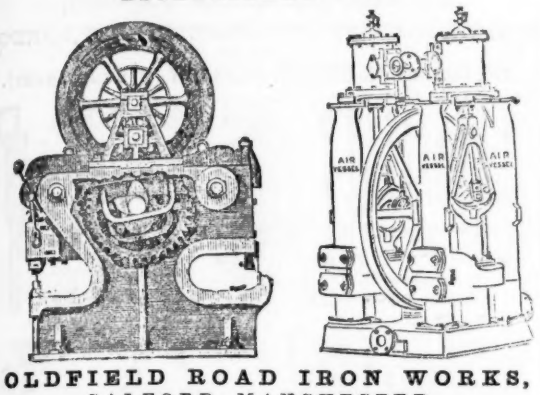

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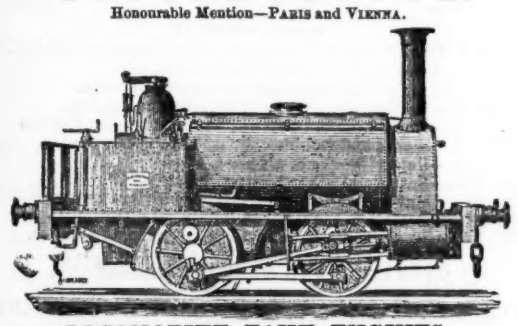

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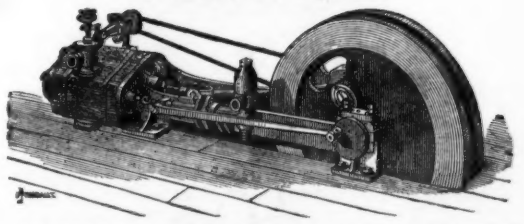

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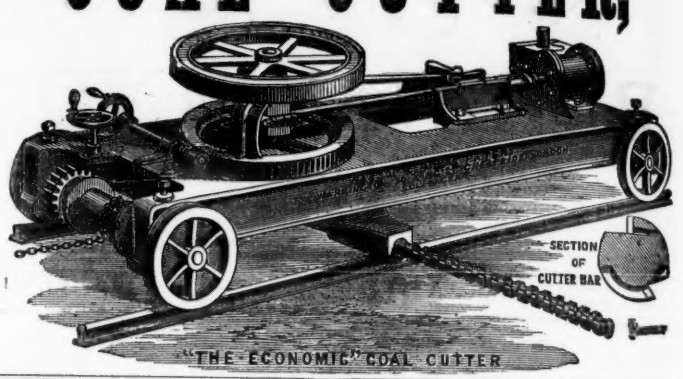

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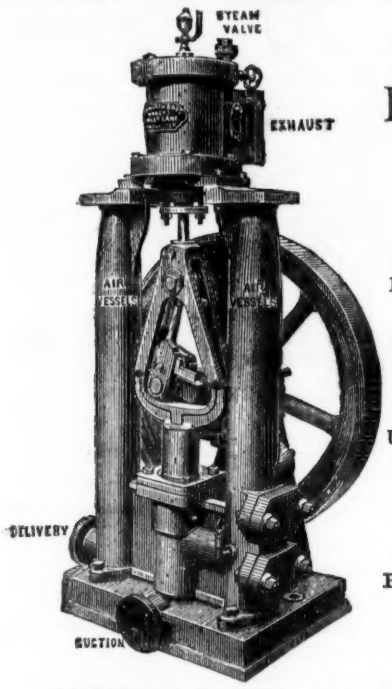

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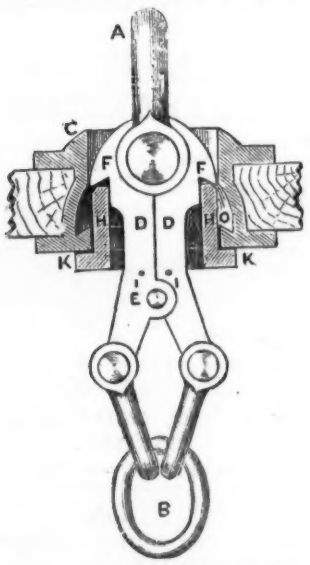

SIX LIVES SAVED.

Walker's Hook, at Tockett's sinking, has saved six men's lives On the 6th instant, the kibble was overwound, and but for the hook would have fallen down the pit, where six men were working, 120 ft. below, all of whom would probably have been killed. Thanks, however, to Mr. Walker's invention, the rope alone passed harmlessly over, the kibble remained suspended, and in half-an-hour everything was working as if nothing had occurred.—From the *Northern Echo* August 20, 1874.

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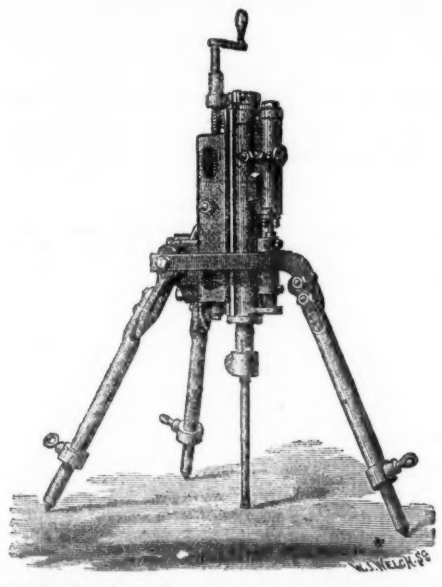

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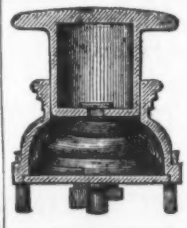

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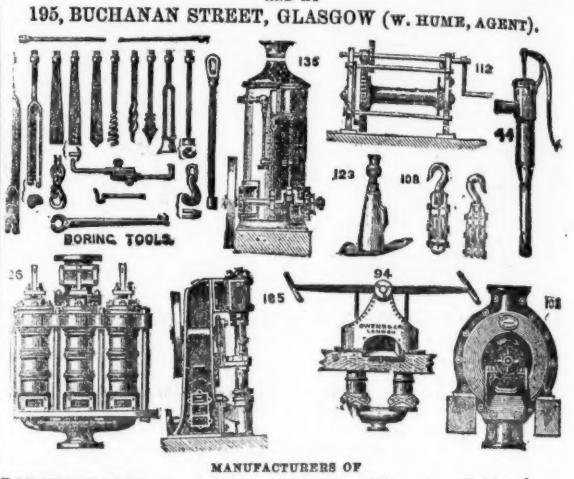

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BORING TOOLS, for testing ground for Minerals. Bridge foundations, Artesian Wells, &c., to any depth.
No. 26.—Treble Barrel and other Deep Well Pumps.
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ALSO EVERY OTHER DESCRIPTION OF

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TURBINES, WATER WHEELS, WIND ENGINES
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DUNN'S ROCK DRILL,

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FOR DRIVING BED ROCK TUNNELS, SINKING SHAFTS, AND PERFORMING OPEN FIELD OPERATIONS,

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MANUFACTURERS OF EVERY DESCRIPTION OF IMPROVED

PATENT FLAT AND ROUND WIRE ROPES

from the very best quality of charcoal iron and steel wire.

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SHIPS' RIGGING, SIGNAL AND FENCING STRAND, LIGHTNING CONDUCTORS, STEAM PLOUGH ROPES (made from Webster and Horsfall's patent steel wire), HEMP, FLAX, ENGINE YARN, COTTON WASTE TARPAULING, OIL SHEETS, BRATTICE CLOTHS, &c.

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WILTON'S MATHEMATICAL INSTRUMENT ESTABLISHMENT, REMOVED from St. Day to A. JEFFERY'S, CAMBORNE.

W. H. WILTON begs to thank his friends for their liberal support for so many years, and informs them that (having opened business at Valparaiso) he has now declined business in England in favour solely of Mr. A. JEFFERY, MATHEMATICAL INSTRUMENT MAKER, CAMBORNE, whom he considers (having been an assistant to his father for several years) is in every way capable of creditably maintaining the good name universally awarded to Wilton's instruments.

A. JEFFERY

Respectfully begs to inform Mine Managers, Surveyors, Engineers, &c., the having purchased Mr. Wilton's business, and the very valuable acquisitions and appliances belonging thereto, he has enlarged his Mathematical Instrument Manufactory, and is prepared to supply THEODOLITES, DIALS, POCKET DIALS, LEVELS, TRAVERSING and PLAIN PROTRACTORS, CASES OF DRAWING INSTRUMENTS, MEASURING CHAINS and TAPES, ASSAYERS' SCALES and WEIGHTS, ENGINE COUNTERS, and, in short, every description of Instruments used in SURVEYING, MEASURING, MAPPING, &c.

Repairing in all its branches promptly attended to.

Original Correspondence.

COAL-CUTTING MACHINERY.

SIR,—Mr. Bass is mistaken in supposing that his time and your space have been wasted. I assure him that it is very far from that, for we could have done no good without his statistics, and, though possibly some interference by the patentees may have happened, which may have precipitated his withdrawal, I beg to express my own decided opinion that he has rendered most valuable assistance and service to the coal-cutting machinery question; but having gone from us, I shall do nothing intentionally to provoke his return to this sea of troubles, and as Mr. Parker and "A Mining Engineer" are quite able to deal with me, I may say that I think it better for all parties concerned that Mr. Bass has gone. He has left a legacy of statements, statistics, and particulars, which have become public property, and in the further discussion of this coal-cutting business with his successors I shall obviously be compelled to refer to some of them, but I will, so far as I possibly can, by softening my words and eschewing any appearance of triumph which would remind him of "wounded feelings."

And now I turn to Messrs. Parker and Tait's very short letter, and notice that their air pressure being stated at 50 to 55 lbs. was an error of somebody's, and that they now wish it to be taken at 30 to 35 lbs. to the inch. I have reason for believing that they work at a higher pressure than this, and sometimes at a very much higher pressure, but that is not of much consequence.

In my last letter I suggested a question to those gentlemen, which though they have written you since they have not answered, and so I will answer it myself. They knew, as they say, that a rotary machine would cut in the dirt, and, as a mental struggle of some kind was evidently in operation, they observe that, "to tell the truth," none else would answer the purpose. They first obtained a Winstanley and Barker machine, and tried it, and from report it failed, and was discarded, and then they took to the Gillott and Copley, which, from report by your ex-correspondent, answers so well. Now, did they put both machines into the same band of dirt? No; they put the former into a place where the pyrites abound, and the latter where there are none. I know these gentlemen will tell the truth when they are put to it, and if this version is not correct they will, I am sure, correct it. Neither do I suggest that it was otherwise than an accidental circumstance — very unfortunate to Winstanley and Barker—but purely an accident. There is a large sense of "justice to absent opponents" permeating the sentiments of your ex-correspondent, and it must have been alone an oversight on his part that it failed the Lancashire inventor, but reached to Virginia.

I now refer to "A Mining Engineer's" letter of last week, and there we find matter worthy of notice. He is a friend to the rotary principle of cutting coal, and has evidently had a good deal of experience, and spent much thought thereupon, but he gives his evidence with frankness and fairness, and without any tinge of personal feeling. He mentions in his opening paragraph that there has been some sort of a contest between the pick and several other machines, and he invites the manager of the Hetton Colliery to give the result of it. This is the first intimation that I have had of the event, although I infer that others have been made acquainted with the fact. If I am wrong in this inference then I will apologise for it, but if I am right then I think I have just reason for complaint, for I am sure your correspondent will admit that candour in such matters is of the highest importance. Of course, he is not answerable for what may have happened at the Hetton Colliery, nor do I in the least doubt Mr. Lishman's perfect fairness if a contest has been going on, but there are weighty reasons why I should object, and I do object.

As your correspondent does not appear to be aware of the fact that our two machines, of which he speaks, have been not "five or six years" at Hetton, as he states, but more than a dozen years. They were the first of the kind which we sent out, and we have never since had a single improvement made to them, nor have we ever seen them since they were first put to work in the Elemore Main Coal, which, as he truly remarks, is as hard as any seam in England. And although the said machines were originally weak and defective in construction, as compared with the modern made ones, and that they are more than 12 years old, furnish to my mind abundant reasons why they should not be sent into competition with machines which he informs us have been at Hetton only "a few weeks," and on the strength of that information I do not think I am premature in entering my protest against the whole transaction.

During those 12 years many trials of new inventions have been made at Hetton for cutting coal by machinery, but from time to time we have had expressions of satisfaction from them with the working of our pick machines, and it is only within about a year that we received overtures from a gentleman of high authority there for an enlargement of our arrangement, but we deferred the proposed meeting because we had certain improvements in hand, and we were not anxious to make them known until perfected. These are now completed, and secured by a recent patent.

I object, too, to your correspondent designating a circular saw a slotting machine; the latter has its entire force transferred to a single and limited point of contact with the substance to be operated upon, but the latter (Gillott and Copley's case) has 30 teeth set on the periphery of the circular plate, and 15 of them are in constant and equal pressure distributed at equal distances over one-half of a large circle of 3 or 4 ft., and scraping or grinding out a semicircular groove of half its diameter. Nothing turns upon this point, and I leave it.

In "A Mining Engineer's" letter of May 15 he states—and we may as well just see how the case stands—50 tons in each eight hours were cut, and on May 29 he shows us the size, speed, stroke, pressure of steam, and pressure of air, which really indicate nearly 60-horse power, but I rate them, for the purpose of being moderate, at only 48 horse power. He gives the consumption of coal for this at only 5 lbs. per horse-power per hour, whereas I take it to be at about 9 lbs., so that according to my estimate the consumption would practically be 2 tons per day. And as respects the distribution of the power, my views do not agree with his, for if the *average* work done be but 6·25 per hour, and the engines not applied during the interval of suspended cutting to any other service than the cutting machine, steam would have to be kept up from the usual hour in the morning for starting till the usual hour for terminating the day's work.

Does his engine, which he describes, do any hauling or pumping? for if not we might just as well have one exact example by working out the figures from an actual existing operation, and we can afterwards make allowance for exceptional circumstances pro or con. I will assume, then, that he does no other work than drive a single Gillot and Copley machine, and that with banking and getting up steam the consumption may be rated at 9 lbs. per horse-power per hour, then 2 tons of coal must be charged, and I leave the other charges exactly as they stand in your correspondent's figures. Thus—

	£	s.	d.
1 engineman at 6s. per day	0	6	0
1 fireman at 5s. ditto	0	5	0
2 tons of coal at 7s. per ton	0	14	0
Stores and sundries at 1s. per day	0	1	0
Total	£1	6	0

This on the 50 tons per day (as per May 29 letter), average of four months, comes to 6d. and a fraction per ton in the prime first cost of the air, without allowing for outlay, interest, and other incidentals.

I see it stated in the Journal of last week that the Gillot and Copley machine has recently been tested side by side with the Baird machine, and that it proved itself to be 66⅔ superior to its Scotch rival. This is important in a novel sense.

I hand you with this a copy of the "Transactions of the Cleveland Institution of Engineers," on Jan. 15, 1874, and at page 99 you will find a paper by an eminent member of that body written in the interest of the Baird machines performance at the Hetton Colliery, in the early part of 1873, and you will there find it clearly established that by the general use of the Gartsherrie coal cutter not less than 52⅔ per cent. of all the miners employed could be disposed of; and now, with the superior efficiency of the Gillot and Copley machine over the Baird, as named by your ex-correspondent, 66⅔ per cent. *additional* men may be dispensed with, making together the very important saving of 86 men out of every 100! Between the two we shall soon be perfectly independent of all colliers. There must, one would suppose, be some mistake on the part of either one of these gentlemen or the other, but having brought the fact to your notice I do not propose myself to follow it any further at present.

There are in "A Mining Engineer's" letter of last week several distinct, but all-important, matters to be answered, and I must ask you to allow me to do so as fully as I am able.

1. *As to the Cutting Speed of the Pick Machines.*—It happened accidentally that you visited the West Yorkshire Colliery on May 28, without there being any previous knowledge or intimation given to the people at the colliery, and there you saw for yourself the pick cut 3 yards on the face to a depth of 38 in. in 3½ minutes. You, I am informed, gave the order to stop, being satisfied with what you had seen done. This is at the rate of over 50 yards per hour, and I have never yet heard of any other coal-cutter doing its work so rapidly, so that its reputation as a high-speed coal-cutter is not hereafter likely to be disputed.

2. *The Durability of the Machine.*—The experience at the Hetton Colliery, where in one of the hardest seams in England the condition in working order has been maintained for more than a dozen years, and even then to be considered by the authorities as fit for a race against certain newly-made opponents, is, I have a right to suppose, conclusive proof upon this point.

3. *As to Portability.*—Now, as two men can carry the pick machine to or from any place in an ordinary English coal pit where its services are required, releasing it from one and starting it in another without any other assistance, and by reason of its shortness can be taken on its own wheels round the turnings and points of a common tubroad, I will not argue anything further to justify the claim that it is a portable machine.

4. *The Quantity and Cost of Air.*—The cost in wear and tear, repairs and maintenance, the cost in attendance, preparation in straight work or end cutting, these separately constitute the principle elements of final cost in working, and *must* be accurately ascertained before it can be known as to the relation that each machine holds towards its rivals.

When the first two conditions here laid down have been secured, and indisputably proven, and when the complete circle of one week's working is done, then the capabilities of any machine are as amply and reliably tested as would be shown in working four months or four years, and no man who understands the subject will for a moment dispute the proposition. It does not after that time in the slightest degree depend upon the machine; good management, surrounding natural circumstances, intelligence, and expertness of men, these, and some other collateral matters, have the responsibility, but then the machine has none; and a ledger account of the working of any machine, though interesting in many ways to a statistical mind, has no other value in respect to the quality of a machine. It may suit the feeble knowledge of a mooning amateur to cry "wolf" when there is no wolf, but men, who know their business, will attach no more importance to such accounts than I have imputed to them. In the case of the tables which your systematic correspondent, "A Mining Engineer," has placed before us, there is undoubtedly great value from the information which they impart—information which we could not get at through the other channel, as neither names nor places could be obtained, nor proof of statements permitted; and I am infinitely obliged to him for giving the data, anonymous though it be, for there is the evidence of truth on its very face, and upon that data I deny that the Gillott and Copley machine is superior to the pick *in any one* particular, and that it is in most of them incomparably inferior to the machine which I represent.

The Iron-Man may, on the Darwinian theory, have a great future before it, and develope into an angel, or it may become a fossil of an extinct species, will not concern me much, and I will leave that part of the subject for your ex-correspondent to "rotate" in his mind whether a single-barrel or a revolver will do the most execution with the least consumption of amunition.

Your correspondent has cleared up the question of the cost of removing his machines to and from the working places, but I am still unable to make out how the cutting out the ends and the wheelholes are paid for; I hope he will forgive me for asking for the further information as to how much he pays for filling, and such other work as he lets to the same persons as do this hewing, and state whether the cutting is done on the end or the bord by each mode.

In order that there may be no mistake about the cost of working his machines I will repeat my understanding of it—Two men, who do the road laying, taking it up as they go along, and leaving none, and remove the machine from one working place to the next. That on an average of four months they have done 50 yards in each shift of eight hours (6·32 per hour), and for which they receive 6d. per yard of 36 in. depth of groove. This is for wages 25s. for the two men, or 12s. 6d. each, or 3*l.* 15s. per week, and if the horse and the driver be not charged to the machinemen there will be some expense additional. Large as these wages are let us compare them with the deliberate statements in your columns, made by the agent of the Gillott and Copley, in the *Mining Journal* of April 21, wherein he distinctly and emphatically states, so that there can be no opening for doubt or misunderstanding, that his machines cut on the average 22 yards per hour, and assuming that this pay is on the same scale as those paid by "A Mining Engineer," then there are 176 yards per day of eight hours, and this at 6d. per yard is 88s., and allowing three men for each machine, this gives 29s. 4d. per day, or 8*l.* 16s. per week for each man. Your correspondent has only two men, and if this is the limit of those who cut the 22 yards per hour, the wages would then be 13*l.* 4s. per week for each.

We are precluded from attributing the foregoing allegation to an error or oversight, for in the April 21 letter it is twice made; and again on the 6th inst. he says, "the statement is no vain boast," so that six weeks have gone over our heads since it was made. There has been no contradiction of it yet by the worthy author, and I should now object to its being altered. And as your ex-correspondent has been blessed with that excellence of memory which qualifies him for a teacher in accuracy, there is no possibility of it being an act of forgetfulness.

As to the cost of air, on which "A Mining Engineer" affords some favourable information, I accept his figures with very great pleasure, because engineers of great eminence have contended, and do yet contend, that from the enormous friction and condensation the cost of highly-compressed air would be so expensive that it would prevent its general utilisation in coal mines. The early and defective construction of our own compressing apparatus and arrangements has prevented our producing our power so cheaply as this appears to be done; but we are erecting new and powerful boilers, engines, and air compressors, capable of supplying power for 25 to 30 pick machines, and we shall then be able to solve the problem; and, in the meantime, I thank your correspondent for his contribution, and may add that it is the first help I have received towards its elucidation. But, notwithstanding this reduced cost, he is exactly 112 per cent. higher in cost than his retired predecessor in this controversy, as he represented that it is being effected at the New Market Colliery for 0·70d. against "A Mining Engineer's" 1·52d.

Rude remarks have been applied to me by that gentleman for saying that the 0·70d. was an error, because at that particular colliery I had stated that a Gillott and Copley machine required about 30-horse power to drive it; but we have now a better foundation to build upon, for "A Mining Engineer" states the matter in a form that admits of no cavil. The diameter from his own figures of his air-cylinder is 14 in.; the diameter of the steam cylinder is not given, but I will put it at 15 in.; the stroke 30 in., the speed at 60 revolutions per minute, and the pressure of steam 45 lbs. per square inch. I make the area of cylinder 176×30. Average pressure through the stroke. Thus—

$$\frac{176 \times 30 \times 60}{33{,}000} = 48 \text{ horse power Indicated.}$$

Can your late correspondent alter this fact? And if not, where is the "absurdity" in my saying that at New Market one Gillott and Copley machine consumes 30-horse power, when this is 48-horse power.

And now I come, lastly, to the most serious matter of all, for your correspondent says in the final paragraph of his letter (see *Mining Journal*, 29th inst., p. 595) as follows:—"It is just in the minor details that we can help one another. If this be done, I for one entertain no doubt as to the ultimate result of mechanical coal-cutting in a pecuniary sense—a result which I have certainly never yet seen." Your correspondent has a strong feeling in favour of the Gillott and Copley rotary machine; he has had several of them in use for a length of time, and has no doubt worked them as well as it is possible for them to be managed; and yet he *has certainly never seen a pecuniary success* from their performances. This is a "heavy blow and great discouragement," not only to the Gillott and Copley machine but to all others engaged in the same class of labour. There are, no doubt, the three degrees of comparison to comfort some of us, but when your able and candid correspondent tells us that he is looking for the waifs and strays from others in his profession for the discovery of some means to enable him to make the rotary yield a profit, we cannot but turn our sympathies towards another gentleman, whose poetical coal cutting must be put out of harmony by these remarkable results, and coming from one of the best and certainly truest of all those who have written upon the subject. It may be some consolation to learn that *we* have brighter prospects, and I enclose you a paper for your private use only for the present.—*Burley Wood, Leeds, May* 31. WILLIAM FIRTH.

COAL-CUTTING MACHINES.

SIR,—When Mr. Isaac Gray Bass, of Sheffield, found that he had made an unfounded and injurious charge against two men—persons quite unknown to him—we should have expected at his hand an immediate withdrawal of his statement, and a suitable expression of his regret, and this, we believe, would have been the conduct of any gentleman of character and proper feeling, but Mr. Bass has not done this; indeed he has, after some delay, again addressed you, and in effect repeated his libel, and with a hardihood which deserves censure he refers us for "solace to our wounded feelings" to a gentleman who has not in the smallest manner contributed to the wounding of our feelings. Under these circumstances we call upon Mr. Bass either to retract his statements, which we declare to be a calumny, and to give us the opportunity of showing that it is so, or that he shall prove that our statements are untrue. Will you oblige us by giving the insertion of this appeal in your next publication?

JOHN OXNARD, Mining Engineer.
EDWIN HOGGINS, Mechanical Engineer.

Tingley Collieries, June 2.

OAK-BALL DAY IN GRANITESHIRE.

I think, Mr. Editor, if I were to propound to you the simple geographical question of—Where is Lleyn? you would be most sorely puzzled; but if it were put—Where is Nevin? or, more easily still—Where is Porth-dinllaen? the result would be an instantaneous outstretch of the right hand, as we see at those wonderful examinations of those wonderful wee boys who square or cube ten figures whilst I am vainly struggling to recollect what eleven times eleven are. Well then, finding the *ways* of our northern towns very *bad*, and covered, as a rule, with metal as unendurable as those *intentions* that are said to pave another and a nether world, I economised my *fete-day*, and celebrated the restoration of my namesake by sallying out, supported on either hand by Hector and Ajax, in search of *granite*.

Of course, we could have deposited our precious carcases in the 3 P.M. from Cottonopolis, and found ourselves at Watling Street's northern end at 8·10, but, having recently *done* the Holyhead line, it was agreed that a dash across Chat Moss, and another across a slice of the Irish sea, would give novelty to our *view*. Just as the glorious *Nile* was beclouded by the death of Nelson—immortal mortality!—so was the opening of the Manchester and Liverpool Railway saddened by the death of Huskisson, who with the Iron Duke rendered still more illustrious by their presence the completion of that huge work. An hour found us in the town of the Dickey Sams, of the very apocryphal *liver*, and of the exchange of the shiny hats. What an amount of brushing and ironing must be ceaselessly going on all down Castle, Lord, and Church streets every morning to keep those hundreds of *tiles* in such highly-varnished condition! Well, but you know, Mr. Editor, a phrase explains all. The Dickey Sams are "gentlemen," while Manchester produces only MEN. Shininess and solidity both begin with one letter, as do Macedon and Monmouth, and there, peradventure, the resemblance ends!

Our train gave us 45 minutes to reach the boat, which we chiefly devoted to, unfortunately, a very hasty view of the one *great* building of Liverpool—St. George's Hall. What a grand pile it is! How chaste! how massive! how simple! and yet how impressive! There is a something of repose and quiet beauty in the classic style that neither Gothic ever gives. Poor Elmes! it was said he was written to death by, otherwise, impotent rivals. Never mind. *He* has left a splendid monument of his genius—*they*, NOTHING! Nothing but the execrated remembrance by all lovers of true genius of their remorseless "envy, hatred, and all kinds of uncharitableness." *Apropos* of character, commercial honour, &c., I would just cram in a line anent thereto. Hector had forgotten his travelling cap, and, knowing I knew my whereabouts, asked where he had better refit. Acting upon my invariable rule of never going into puffing shops, I took him to one where I had, without a break, bought my headgear for a quarter of a century. He was soon suited from the ample, well-assorted stock. Price? Four and sixpence, Sir. A pottering down of the brass was instantaneous, and the cap was being unceremoniously crammed into the most gaping pocket, when, in blandest tones, worthy in all ways of Oily Gammon, the —— salesman asked to be permitted "to remove the ticket." This excited Hector's *easily aroused suspicion*, and *he* "removed the ticket," but, in removing it, examined it, too, when, lo! 3s. 6d. in plain numerals was written thereon. Need more be said about expressive faces, &c. The game is not worth the candle. The 3s. 6d. was paid, and the cap sold, and the customer too. It was his first, and it will be his last, "trade" there, and mine also! Gentlemen, *examine your tickets!* Five minutes brought us to that wonder of the world—the great landing-stage. It is rising rapidly from its ashes, and, Phœnix-like, with renewed existence, but excelling its prototype in this—it will have grown enormously during *cremation*. It will soon be the grandest marine promenade in all the world.

Oh! would the *dwr* were cleaner, or our olfactory nerves less sensitive! The Mersey—always noble, always interesting, always crowded with vessels (I was going to write *craft*, but after the episode of the cap it may be thought I am "still harping on my daughter"). Well, if it is so it must be so, and there is verily—

"Craft in the river, and craft in the street."

We embarked on board the good old steamer Prince of Wales—her fog-bell inscribed 1846. If the *Prince* dates from '46, where does she stand on Lloyd's list? Not A 1, surely! We'll trust her teeth are sound, and still carry, if not the marks of youth, the evidence of strength thereon. 'Forty-six. There's something in that date that should not pass unsaid or unsung! Was not that the year of the Irish potatoe famine? If so, even that terrible scourge had its compensating—perhaps more than compensating—balance in the repeal of the Corn Laws. How well I remember the horrible results that were to have followed the "atrocious treachery of Peel" (all men honour the great backslider!). How all our land was to lie barren—grass grow in all our streets—ships rot in all our docks—the whole population, tag, rag, and bobtail, make tracks for America—despondent Britannia (who would not be comforted) weeping herself away into her own native brine, and leaving nothing behind her but an old rusty trident that Neptune gave her when she assumed the sovereignty of the seas.

Our passage from Liverpool was marked by the almost unvarying incidents of deck and cabin. The same kind of people seem to be always "going down to the sea in ships." The same kind of farewells, differing very little in degree of effusion whether one sees it on board a Runcorn barge or a P. and O. bound for the Orient thousands of miles away. Did you ever see a deck, for however long or short a passage, without that little, restless, nervous fellow who commences tramping from end to end long before the bell has signalled "heave off," and smoking, too, with forty-Dutchman power as though he would out-rival the funnel above him. And yet, depend upon it, it is all make-believe—Dutch courage—just like the

whistling in a churchyard ("where graves do yawn") to keep the pecker up.

Then, the meek-looking curate, with his meeker-looking wife, and the *inevitable* string of innumerable bairns, attended always by a very, very young, and a very, very old nurse—cheapest *help*s in the domestic market. Poverty and progeny—luxury and the lack of them! How is it one so often sees this contradictory state of things? Then, there is that stiff-built, weather-worn, sharp-eyed fellow, whose calling you decide *must* have been that of a professional cricketer, captain of a coasting-boat, retired cabman, ticket-o'-leave keeper, *lagged* for poaching.

Then, those two girls are always there (one dark and the other light—one pert and the other most demure). There they are, ensconced, as usual, in the snuggest and most eligible place for their *business*—the lee side of the "companion." It may be that the very name has a charm for them. See, they occupy four camp-stools, two for seats, and two for foot-stools. And why this? The extras are *set* as man-traps, with sparkling eyes as *bait*. Do you think they do half as much "tatting" as they do—well—observing? I always notice their shoulders or feet want continually wrapping or unwrapping, and, singularly, it always occurs just at the moment the capting (militia and volunteer pronunciation) with the blonde moustache, who sat opposite to them at lench, is marching down upon them. And, then, the forlorn and bilious, they never vary—the same faces, almost the same *togs*, with ever the same bistre-rings under the glassy eyes, sure and sad index of indigestion with all its horrors.

But why go on further? If you have read (but of course you have, we all know you have read everything) Elliot Warburton's "Crescent and the Cross," *his* embarkation and start from the Thames will suffice for all time as a description of sea-going scenes. Poor fellow! He went once too often for himself, the world, and literature. Amongst all the lamented of the President none more or more deservedly so than he.

With a brisk wind on our starboard quarter we made splendid progress, past the Leasowes, on whose shore I once saw eight wrecks, the work of one great storm—past Prestatyn with its tall chimney, making a fine landmark, and indicating, too, one of the oldest, and for scores, nay, hundreds of years, the richest lead mines in that richest of lead counties, Flintshire—then Abergele, with the very picturesque elevation of Gwerch Castle, whose castellated towers are well relieved by a perfect wealth of luxuriant foliage—past Colwyn with Pwllycrochan (pit of the pitcher, or "crock"), erstwhile Lady Erskine's seat, now one of the "Ex-pender's" *leavings* in the form of as beautifully a seated hotel as "tottering age or whispering lovers" could well desire, if anything *will* satisfy the desires of those two epochs in our lives.

Very cold and very gloomy to here, here kind old Sol cast gleams of aureate on Penmaur's *bach* and *mawr*, illuminating Llewellyn's Camp on the latter bold headland, whose scarified sides (by granite setters made), by some strange optical illusion, took the forms of castle keeps and watchtowers high. Then we rounded Ormeshead, the *bach* and *easied*, into Llandudno Bay, disembarking a part of our cargo and a part of our passengers into huge rowboats, the tide not serving (if it ever does) to deposit them high and dry on the little wooden pier. A few, very few visitors "assisted" at the ceremony, and they of the order who most do congregate about that horror of the Thunderer, "the hardware village," notorious forever now, not as the scene of the Bullring riots, or as the seat of the noblest tribune the people ever had—John Bright—but in the eyes of the insulted Jove, whose broadsheet was burnt under Nelson and Bronte's very nose, will be known to all time—all newspaper time—as "the metropolis of electro-plated spoons and lacquered shams." Away, then, round Great Ormeshead, and over or very near the Dutchman's Bank—dread cause of the most dreadful shipwreck on this or any other shore, that of the Rothsay Castle. I never turn into the lovely entrance of these lovely straits without heaving a sad, sincere, but heavy sigh to the memory of those struggling hundreds who made sudden knowledge of the dread "beyond" within sight of sheltering shores.

Puffin Island, without a puffin, and without a rabbit, tenanted alone by the semaphore signal "staff" and an army of devastating rats, who have driven every coney away, or rather, I ken, devoured the whole colony.

Beaumaris, well named, for beautiful is the site and beautiful is the sea. The old ivy-mantled towers of its low-set, massive castle, overtopped by Baron Hill (seat of the Bulkeley Williams's), and surrounded by its picturesque woods and lawns, make a lovely picture on your right, while Ormeshead, Penrhyn Castle, the pass of Nant Francon, and the Denbigh and Carnarvon Hills, form a splendid background on your left. This view seen once 20 years ago, with a sunset over Manxland, and the reflection shedding burning gleams of gold and crimson, "freaked with jet," all over the eastern sky, remains as firmly fixed on the retina of my mind's eye as though I looked on it yesterday. At Beaumaris we left the "tatters," who, true to their trade, riddled into other *tatters* the heart of the blonde moustache by two such scorching glances as dare only be given under "parting" circumstances. Peradventure they may meet again, and then the *bill* may be considered as "accepted," seeing that it was partially *discounted* by that last ocular demonstration of undying love. We soon arrived at "the Bridge," and such a bridge! Where did ever beauty, strength, and elegance so charmingly combine? If Telford had done nothing else, and the Government of good, slow, easy "Farmer George" committed no other *job*, this graceful structure would have rescued either or both from oblivion.

The heavy "tubular" lies a little further up, grand in its massive plainness and unpretentious style, and rendered almost Egyptian, too, by those Sphinx-like lions guarding its gloomy-looking portals. The Britannia rock found a fitting base and a fitting name for Stephenson's crowning glory.

Carnarvon (not Caer, we cannot afford time or ink now to even spell correctly in these telegraphic—oh! huge waste—these *wiring* days), and thus at length we arrive at Watling-street's northern end. Drop a line or a stick here to Romney, and then see how much we have to thank our Roman conquerors for in striking out this amongst those other main arteries through the length and breadth of the land. Hasty but most elaborate preparations were made for the invasion of Lleyn. The now almost ubiquitous train dashes us along to Pwllheli (briny pit), possessing one of the finest beaches in the United Kingdom; and when some far-seeing, keen-eyed cockney of large fob and larger connections buys up the surrounding belt of land, and builds a dozen *terraces*, and 100 bathing boxes, let Brighton, Scarborough, and Aberystwith look to their *shingle*, for there is none here, nothing but sand, sand everywhere, hard as need be, level as a billiard-board, shelving gently and safely, and extending for miles. I think I need hardly tell you that St. Tudwall's Roads, the safest man-of-war anchorage round the British Isles, is within sight. So let your nautical friends bring their Zephys, Flying Foams, and Saucy Kates in fullest confidence of getting snugly berthed.

How splendidly these amateur skippers *navigate* in a coffee-room, and what tremendous sail they carry when narrating their last voyage to a—barmaid! Listen a second, if you can find patience, to a glib but mongrel mixture of larboard and starboard, gaff and tops'ls, jib and spanker, keel and tiller, and then all of a sudden you find De Maury bothered by lee and wind'rd; in fact, like the people of Nineveh, he barely knows his nautical right hand from his left. Well, well, it pleases them and it does'nt hurt us. "They pays their money and they takes their choice," and it fills our *safest* straits, bays, and creeks with pretty little craft and *pretty* little men.

Nevin was reached with difficulty, as our Pwllheli nag was simply a "beast," stopped at every *broo*, timing the detention according to gradient, but evidently feeling acutely a rise of 1 in 1000. Much patience (and much impatience too), much getting in and out, much whipcord, very much oak sapling from Hector's Corner, much inward anathematising from the silent one at length brought us to Nevin.

Here we found ourselves at the extremity of a range of granite and porphyry hills of very respectable altitude, and overlooking a sea and shore of supreme beauty, lying as it did at our feet like a shield of burnished steel rimmed with emerald. The little bay of Nevin and the larger one of Porth-din-llaen forming semi-circles in this adamantine shore, Holyhead standing some 20 miles due north, and the Straits of Menai 6 or 7 miles, but more to the east, will give you our bearing. Here, too, we found ourselves in Vortigern's footsteps, one of the valleys being called after him. I wonder what brought that famous southern king so far from home when travelling was so decidedly dangerous. Did he come to help Hengist and Horsa in whacking the dangerous Scots and Picts? Or did the charming Rowena tempt him hither (after embracing her and Christianity together)? to aid in subjugating neighbouring Mona—dread haunt of cruel Druids and their zealot crew! Oh! could those so-called *sacred groves* (part of which still stand) tell a myriadth part of the ghostly horrors of their horrid rites the very stones would even now cry out against them. What atrocities, oh gentle peace, have been perpetrated in thy holy, loving, tender name! It was well that *religion* was the word chosen to represent bodies of men *bound together* to force their orthodoxies on everybody else's heterodoxies. So it will be to the end. "They are right because they think as we do." *So says every sect.*

A clamber up the quarry conveyed quick conviction that every street *sett* represents at least twenty times its size of its fellow-stone, and that even quarrying granite may possibly not be minting gold, we hurried down to raise the dormant energies of our stopping steed. An extra *bob* for catching the 4·5 train strengthened the fibres of Jehu's arm, aided by the sting of Hector's sapling. With such persuaders of course we caught it, and then rattled away to Tre and Portmadoc, caught a rapid glance from Turner's point of view, whence he took his sketch for that gorgeous picture of Snowdon. Away through Harlech, Barnmouth, Dolgelly, Bala, Corwen, Denbigh, St. Asaph, Rhuddlan, and Holywell home. We inspected a very rich deposit of lead and barytes, of which, if the Fates are propitious, you will hear more anon. It is one of the best things at present on the mining cards.—Yours inextinguishably,

ASBESTOS.

DYNAMITE—IS IT DANGEROUS?

SIR,—The enclosed account of a trial in the United States, which involves the question whether dynamite is a "dangerous" article under the usual law of transport, will be of interest to those engaged in mining, and also to railway and other carriers. You will observe that the Court, after hearing the most able arguments on both sides, decided that dynamite could not be considered a "dangerous" article.

Newcastle, May 31. J. S.

GIANT POWDER AS FREIGHT—INTERESTING TRIAL IN THE UNITED STATES DISTRICT COURT AT AUBURN—IT IS PRONOUNCED NOT DANGEROUS.

The United States District Court, while in session in Auburn, Nov. 25, 1874, Judge Wallace presiding, was occupied last Saturday in trying a case of more than usual interest and importance. It involved the question whether giant powder is dangerous to transport. As many of our readers may not be acquainted with this extraordinary explosive, we will give a brief account of its composition and qualities. Its proper name is dynamite, but in this country it is better known as giant powder. It is of two kinds:—No. 1, composed of 75 per cent. of nitroglycerine, and 25 per cent. of infusorial earth; No. 2 has much less nitroglycerine, and the deficiency is supplied by nitre, saltpetre, and resin. No. 2 is not quite so strong as No. 1, and only half as costly. It has the look of dirty corn meal, and gives no sign to the eye of the resistless power it contains. Its explosion does not take place like gunpowder, burning from point to point; but the entire mass, however large, bursts at once, as if the band that held it were cut, and the recoil of each grain took place at the same instant. It shatters the hardest rock as if it were the most fragile of things, and rends wrought iron and solid steel as if they were rags. The lightest charge of it in the heaviest rifle or ordnance tears the gun into a thousand pieces. It is as good in water as out. If turned loose into a bore-hole filled with water it sinks to the bottom—is tamped by the water, and explodes with full effect. From the fact that dynamite contains nitroglycerine, which in its normal condition is one of the most easily explodable of all things, going off on the smallest sharp percussive shock, or blow, or jar, and, therefore, extremely difficult and dangerous to transport or use, it has been supposed that the powder was in like manner dangerous. By a certain Act of Congress it is made a misdemeanour, punishable by heavy fine and imprisonment, to ship nitroglycerine, gunpowder, friction matches, camphine, or other like highly inflammable or dangerously explosive substances on steam-boats without marking the name or character of the contents on the boxes or vessels containing them.

Varney and Doe, agents of the Atlantic Giant Powder Company, New York, and their factory at Drakesville, N. J., some time since caused 220 boxes of giant powder, containing 11,000 lbs., to be shipped over Lake Erie on two steamers without being thus marked. They were arrested and indicted by the United States authorities, and on Saturday last were tried. The defendants based their defence on the fact that the powder was not dangerous to transport, and was, therefore, not within the requirements of the law. The whole case turned on this issue. During the trial the following facts were shown beyond question:—

That mere fire or heat will not explode it. It burns to ashes like saltpetre paper. This was done in Court: 8000 lbs. have been burned in one lot without exploding. Those acquainted with it stand upon boxes of it while the powder within is on fire. A cartridge of the powder is held in the hand and set on fire, and when half burned is extinguished by a little water or by the foot. It is poured upon a red-hot iron plate, and a red-hot poker thrust into it without an explosion. A box of it is thrown from any height upon rocks until the box is broken in pieces. Naked cartridges of it are treated in like manner. A box of it is placed on a flat stone, and an iron weight of 90 lbs. let fall on it and repeated until the box is broken to splinters. Boxes and cartridges of it are pounded with a sledge-hammer without limit.

The secret of its safety lies in the fact that the absorbent is soft, compressible, and elastic, whereby the powder becomes a cushion on which all blows are deadened. A blow upon it is like a blow upon a meal bag. Hence the greater the quantity the greater the safety. It has been subjected to the severest tests by numerous scientific men, engineers, experts in explosives, committees, and military and other commissions; railroad, steam-boat, and other freighting companies; contractors, miners, and blasters of every class. Several Governments of Europe allow it to pass as common freight. During the last five years it has been transported to the extent of millions of pounds per annum by all the ordinary means of conveyance in every climate and temperature, and not one ounce of it has ever exploded while thus *in transitu*.

The only practicable means of exploding it is by a large and powerful percussion cap. Those exhibited were 1 in. long and ¼ in. in diameter, and had ⅜ in. of fulminate of mercury. A fuse is inserted in the open end of the cap, which is then placed in the powder. The fuse fires the cap, and this explodes the powder. One of the caps was exploded in the Court-room, and made a report like a pistol.

At the conclusion of the evidence and argument the Court carefully and ably reviewed the case in all its bearings, and particularly the evidence on the question of dangerousness, and then directed the jury to find a verdict of not guilty, remarking that it would be idle to submit the case to the jury, since if it should find a verdict of guilty the Court would be constrained, under the showing made, to set it aside.

MINING IN COLORADO—THE TERRIBLE LODE COMPANY.

SIR,—In the Journal of April 17 I see that the report of the Colorado Terrible Lode Company states that the owner of adjacent property *may* institute proceedings to prove that the lower workings encroach on his property. Now, as this is a statement apt to mislead shareholders, I should be pleased if you would insert the following in your next Journal. In the first place, from the report the shareholders would naturally suppose that the mine was working as usual, and only something in the distant future was anticipated. I myself am a shareholder, though now but a very small one, and knowing the real state of affairs, wish to communicate to my brother-shareholders what the directors seem to withhold—for what reason they probably know best. That the directors knew better on April 17, when they allowed the statement in the Journal to appear, can easily be seen from what follows; for on March 15 or 16 the Secretary was telegraphed that Mr. Hamill had broken through into the company's workings, and letters of about the same date informed the directors as to the exact circumstances and likely consequences. Again, about April 7 or 8 the Secretary was informed by telegram that Mr. Hamill had obtained an injunction against the company, and consequently the mine was stopped. The report then goes on to state that the company have a U.S. patent to their property, which Mr. Hamill has not, and seem to rely on this as a sure point for the judge to reverse his order. Here, however, I think the directors have made a great mistake, for I believe Mr. Hamill has a U.S. patent for the Elephant and Silver Ore lodes, lodes adjacent to the Terrible, and has made application for a patent on the Gunboat lode, and beat the Terrible Company at the December term of the District Court in a suit they brought against him to adverse his application for patent. Further, the directors do not state that during the five years the company have had possession of the property this same Mr. Hamill has always laid claim to it, and said he would eventually have it, but in consequence of not being flush of cash was unable to do the necessary work to prove it.

From the above I think it will be seen that Mr. Hamill must have some sort of a claim. Although I do not mean to say that it is a sufficient one to take away the company's property, it may be enough to give a great deal of trouble, and I consider that the directors were very much to blame in not purchasing Mr. Hamill's property from him last fall, when it was offered at reasonable figures, and they were advised by their manager to close, for the property itself is undoubtedly valuable, and covers the extension of the Terrible. Now Mr. Hamill will not sell for three times the amount he then offered it for. I hope that in future the directors will keep the shareholders properly informed of the true state of affairs, so that they may be able to place reliance in them, otherwise it is very possible they may be exposed from time to time by letters from this side of the water.

Why is it that the directors of mining companies seem to delight in either making misleading statements or only telling about half the truth? It is this that has done as much, if not more, towards the ruining of mining enterprises than the real worthlessness of property. For capitalists are afraid, and rightly so, to intrust their money in the hands of parties who will not let them know how the enterprise is progressing in which they have ventured it.

Georgetown, Colorado, May 12. ERNEST LE NEVE FOSTER.

MINING IN COLORADO—THE TERRIBLE LODE.

SIR,—A Denver correspondent says, in last week's Journal, that the Colorado Terrible Company is involved in litigation through a "flaw in the company's title." On enquiry at the London office I am informed that the title is in no way disputed, and the injunction has been granted upon a *bare assertion* that the workings below and west of the tunnel and 4th level are not on the lode conveyed under the patent. At the sitting of the District Court, at Georgetown, in June, the plaintiff will be required to prove the correctness of his claims, in which it is fully expected that he will fail. I learn that the "order to deliver up possession" of the part of the mine in question has been already withdrawn. A SHAREHOLDER.

London, June 1.

THE EMMA PAMPHLET—SECOND EDITION.

SIR,—The second edition of this pamphlet has just been received by me. I had thought of making some remarks on it, but as you gave such a lengthy and accurate review of it, I did not think it necessary at the time to do so. The second edition is more extensive than the first. It contains additional matter relative to other "mismanaged English-American companies, and in some cases with as bad results as the Emma."

Those who are interested in foreign mining no doubt feel themselves indebted to Mr. H. Sewell for the vast amount of information he has given relative to the notorious Emma Mine, as well as many others, which I presume was not generally known. The pamphlet is clearly illustrated by plans and sections, so that any practical miner can thoroughly understand the whole mine by a short perusal of its contents.

Having had 25 years practical experience in mines, I do not consider it presumptive on my part, to state that what the author suggests should have been done, relative to the practical working of the mine, is quite correct, and in accordance with sound mining practice. The fact he brings forward with regard to the pinching up of the vein is not a new thing based on Mr. Sewell's experience of that part of the world alone, for it is a subject which he had written about many times in the Journal, long before he thought of going to Utah.

I have his letters to me on the same subject, written soon after his arrival in that country, in 1871, bringing before my notice what was likely to occur in the Emma Mine.

As regards the slip, or slide, I imagine, that the gentlemen who in consequence reported so adversely on the mine, and thus made a "mountain out of a mole-hill," cannot surely possess sufficient practical experience in mining; otherwise they would be aware, that slips or slides are things that practical miners are continually meeting with and solving; in fact, few mines are free from them.

Mr. Sewell's views have been most fully borne out by Mr. J. H. Morton, in a subsequent communication to the *Engineering and Mining Journal* of New York, and reviewed in the *Mining Journal* of May 22 of this year, which, no doubt, most of your readers have seen, and therefore, I can hardly venture to comment any further on the subject.—*Carnarvon, June* 2. JOHN ROBERTS.

RICHMOND CONSOLIDATED SILVER MINING COMPANY.

SIR,—So many of my friends have bought shares in this company that I am induced to state briefly the reasons which again lead me to the conclusion that the shares will have a still higher rise. The last accounts for the half-year ending Feb. 28 show a net profit of 80,309*l.* 17*s.* 6*d.*, as against 86,591*l.* 1*s.* 10*d.* for the previous year. As the saving expected to be made by the refining works owned by the company will come into operation this half-year, in all probability the future returns will be much increased. Taking the last accounts as the basis, the mine is earning at the rate of 58 per cent. The later discoveries are of a much higher average, and as the cost of working is greater in the poorer ores than in the richer, a higher ratio of profit on this account may be expected. The projected railway from the Palesade station to Eureka is expected to be opened this autumn, and is likely to be of great service in various ways to the company in convenience and reduction in costs. From the data given it may be calculated that the reserves in sight are equal to three years ahead, while the promise of the mine is better than it has ever been. A bed of fine ore has just been discovered, and which is likely to be of great value, situated at a considerable distance from the great ledge, and apparently unconnected with it. The mine with present quarterly dividend of 7*s.* 6*d.* will have paid 2*l.* 14*s.* per 5*l.* share, after payment of this dividend 25,000*l.* stands to the credit of the reserve; a very large sum has been paid for plant, developments, and the new refining works, and about 20,000*l.* must have been earned since February. These facts prove to my mind that the shares are still much below their real value. The capital of the St. John del Rey Mine is 253,000*l.*, and the price of its 100*l.* stock is now 400*l.* That mine makes about 10,000*l.* per month profit. The Richmond monthly average profit is now at the rate of 13,500*l.*, and its 5*l.* shares are only 10*l.* 10*s.*

The most absurd and designedly false statements have been freely circulated with the design of inducing timid shareholders to sell. The appeals to their fears have been based chiefly on the ground that many American mines have collapsed, and that, therefore, there was no reason why the Richmond Mine should not be equally unfortunate. Indisputable facts have proved the utter fallacy of such an argument, and a mine that has nearly cleared its cost in three years, and with more than its cost in present proveable value, is not likely to be put down by any amount of detraction. I conclude with a few remarks on the origin of the Richmond Company. This company was started in August, 1871. The sum of 200,000*l.* was paid for the mine, and only 20,000*l.* remained of its original capital for working the property. This was found insufficient, and the sum of 32,000*l.* was borrowed. The purchase of the adjoining Look Out claim, and the settlement of the costs relating thereto, necessitated the issue of fresh shares to the amount of 50,000*l.*, thus raising the whole capital to 270,000*l.* It was not till 1873 that the mine was fairly at work, and in 1874 the profits were 84,591*l.* 1*s.* 10*d.* Out of these profits the debt of 32,000*l.* was extinguished, so that the property by the end of August, 1874, stood free of liabilities, and having a great addition to its original holding in new mines and claims, new plant, machinery, and works.

Austinfriars, May 31. ALEC. H. WESTAWAY.

CHONTALES MINE—JAVALI MINE.

SIR,—I am glad to learn from the letters of your correspondents, "A Shareholder in Chontales," and "W. B. P.," that that mine has such an extent of property, in which there are such enormous quantities of auriferous ores, &c., but fail to see what those statements prove with reference to the view I took of the relative values of the shares in Chontales and Javali. I certainly cannot agree with "A Shareholder" when he states that Chontales "is maturing itself steadily," whilst Javali "has sprung up rapidly, as a mushroom," &c. I would ask him what signs of approaching maturity he discerns in the reports from Chontales this year? January, a profit of 151*l.*; February, a loss of 72*l.*; March, a profit of 54*l.* I do not pretend to be a specialist in these matters, but I do contend that the above reports are not sufficiently favourable to justify me in investing in Chontales at the current quotations. "W. B. P." says Chontales has crushing power equal to 2700 tons a month, but why is it not used? There were 1860 tons crushed in January, 1858 tons in February, and 1621 tons in March, with the miserable results I have already named. Now, if the full quantity he estimates had been crushed would the results even then have justified an investment? I do not think so: 2700 tons, at a yield of 7¼ dwts., gives only 438¾ ozs. of gold, worth, I suppose, about 1225*l.*, against which must be set increased costs, which may or may not—I do not know—be in proportion to the quantity crushed, but taking them at only two-thirds of the cost per ton of the smaller quantity, they will amount to about 1100*l.* per month, and leave a profit of 125*l.* I leave your readers to judge whether or not a profit of 1500*l.* per annum is adequate to pay the office expenses and a decent dividend on a capital of 120,000*l.* I have already pointed out the favourable results of the Javali workings during this year, and may be permitted to add that, with a yield of gold ranging from 7½ to 15 dwts. per ton, and crushing power for one-half more produce than has yet been treated, I feel very confident that my investment in Javali shares will be the reverse of a disappointment. INVESTOR.

June 3.

JAVALI MINE—CHONTALES MINE.

SIR,—I have read the letters on Javali and Chontales Mines, signed by "A Shareholder in Chontales," and "W. B. P." The former is particularly severe in his comments on the Javali Mine, amongst other remarks, he says that he thinks "Investor," to whom he refers, must, by his letter, be a seller of Javali shares; as an impartial judge I for one should imagine that "A Shareholder in Chontales," by his letter, is a buyer of Javali shares. We know that the proof of the pudding is always in the eating, and when we compare the returns of Javali with Chontales, it takes no *savant* to decide which mine seems the best as an investment. He calls Javali Mine a mushroom, suddenly sprung from its mother earth. He might

know that Javali has been in existence many years, at least several, and that it needs not a score of years to settle the true value of a gold mine, now that modern science has been brought to bear on these properties. A mine which can return such enormous profits as Javali must stand by its merits, in spite of all adverse criticism. Note the quotation of Chontales for the past years, and this matter would in a great measure show that confidence has been lost in the concern. Whatever the future of Chontales may be remains at present undecided. The returns of Javali must now greatly increase as the drought ceases and labour becomes more abundant, and, in fact, when laziness with the labourers is corrected, especially as there is no sinking or raising ore to the surface. "Shareholder" says Chontales, like the oak, is maturing herself, and therefore the public have confidence in her; while it is somewhat diminished in yours (Javali). Methinks the maturing of Chontales has consisted in getting into a non dividend condition for a long series of years, causing the 2*l.* share to drop (for many years past) to ⅛, ¾, if the quotation in the *Times* stands for aught. I am glad to see that it is now quoted ½ to ¾; but in spite of the dimensions or capacities of Chontales, I am inclined to be very practical, and to look at results. "W. B. P.'s" letter I consider decidedly graphic and fair.

A JAVALI ADMIRER.

LITERARY PIRACY—PLATTNER'S MANUAL OF BLOWPIPE ANALYSIS.

SIR,—I have just received from London what purports to be a translation of Plattner's "Blowpipe Analysis," which, upon examination, proves to be an exact reprint, word for word, of Prof. Cornwall's translation published by me. It is translated and edited, or purports to be, by T. Hugo Cookesley, and gives no credit to Prof. Cornwall, but merely says a translation has been published in New York, which he has followed to some extent. I think such a contemptible proceeding should be exposed, and I should be obliged if you would call attention to the matter in the *Mining Journal*. I sent you a copy of my book when first published, and you gave a long and very favourable review of it (see *Mining Journal*, June 29, 1872). I have just issued the subjoined:—

NOTICE TO THE TRADE.—An English reprint of my edition of Plattner's "Manual of Qualitative and Quantitative Analysis with the Blowpipe" having appeared in London, I would hereby caution the trade against introducing the same into the United States, as under the copyright laws parties so doing would render themselves liable to legal damages, as well as to confiscation of all copies so imported and placed on the market. This English edition purports to be edited by one T. Hugo Cookesley, but with the exception of the omission of a few tables, and of some other matter of slight importance, it is a verbatim reprint of my edition, translated by Prof. H. B. Cornwall, of Princeton College. This "pirated" edition is published by Messrs. Chatto and Windus, of London.

D. VAN NOSTRAND, Publisher.

New York, May 17.

REDUCTION OF DUES.

SIR,—Mining is as inevitably, though not as regularly, subject to manias and panics as the seasons are to change. At one time men rush wildly into it, with the same infatuation and delusion as our forefathers did into the South Sea Bubble, or as the then speculative French into Law's "System of Accounts;" but when the produce of our mines is reduced to the minimum of value, and the indispensable articles of consumption high in price, then the mining field is almost deserted, as witnessed by the crippling, mortgaging, suspending, and abandoning of our mines. Compare the years 1871, 1872, and 1873 with the four or five preceding years and the subsequent year and half, and you will involuntarily or otherwise exclaim "What a change!" and simultaneously ask "What is the cause?"

Mining in Cornwall and Devon at this crisis wants more than the cold impracticable sympathy of their inhabitants. It requires the co-operation of capitalists; it needs the delay of heavy merchants' bills. It has had the concession from one-sixth to one-eighth of the wages of our miners willingly and ungrudgingly—it has had the voluntary surrenderings of 1*l.* or 2*l.* per month of our agents' salaries; but, more than all, it craves the reduction (and not remission) of dues. We do not for a moment harbour the thought that the lords of our mines are exorbitant in their demands, or that they are unjust and ungenerous in their dealings with us as miners. We do not assert that their charges are excessive for totally destroying their land, breaking boundaries, &c.; but this much we do affirm, that the reduction of dues, firstly, would be an act of liberality to the taxed shareholder, as seen by the three principal mine meetings reported in last week's *Mining Journal*:—

SOUTH CROFTY.

1-22nd dues on £3237 mineral sold = £147, or call of 3s. 1½d. per 1-937th share.					
1-30th	,,	3237	,,	108 nearly,	2s. 3½d. ,,
1-40th	,,	3237	,,	81 nearly,	1s. 8½d. ,,

TINCROFT.

1-20th dues on £9813 mineral sold = £490 13, or call of 1s. 7½d. per 1-6000th share.					
1-27th	,,	9813	,,	363 8, ,,	1s. 2½d. do., or 1-6th profit.
1-40th	,,	9813	,,	245 6, ,,	0s. 9¾d. ,, 1-10th ,,

CARN BREA.

1-20th dues on £12,048 mineral sold = £602 8, or call of 12s. per 1-1000th share.					
1-24th	,,	12,048	,,	502 0, ,,	10s. ,,
1-30th	,,	12,048	,,	401 12, ,,	8s. ,,
1-40th	,,	12,048	,,	301 4, ,,	6s. ,,

These figures show that were the dues reduced to 1-40th at South Crofty and Carn Brea a dividend of 1s. 5d. and 4s. per share would be respectively declared; secondly, a deed of kindness to the employees, as it would have a tendency to alleviate their privations, improve their condition, and raise their social standing—many would be prevented from leaving their homes if only a little encouragement were offered to search the "backs" of deserted mines without costly leases or grants; thirdly, undoubtedly a source of income to the lord himself, as speculators would be led to more vigorously develope their properties.

The Metalliferous Mines Act may somewhat militate against the proprietors granting their land for mining purposes, as several of them have been prosecuted for open and unfenced shafts; but this may be remedied to protect the lords from the Act by the insertion of a clause in the deed by no means objectionable.

It has been suggested that the dues should be a certain ratio of the profits; but this is hardly reasonable, as the lords would in many cases fall lamentably short. Could it not be constructed so that the necessity of making calls expressly to meet the dues should be avoided; or, when a mine is not meeting costs, a certain proportion of dues, subjected to an increase when the mine pays dividends?

EDWARD SKEWIS.

Gwinear, June 2.

MINE REPORTS—THE VAN MINE.

SIR,—My object in writing you as I did two weeks since on this subject has been fully answered. I was convinced there was an error somehow—a want of coincidence in that report of the Van Mine—and was desirous of seeing it explained. I did not write to you with any undue haste, thinking an error so palpable would be corrected the following week; but finding that nothing of the kind took place, there existed no longer a reason to suppose that it was officially regarded as such. Perhaps, it is not as fully considered as it should be how much outside adventurers are guided in their course respecting mining by the reports of the agents from time to time; and when an error of such magnitude as that to which I called attention takes place it ought, I think, to be met by a prompt voluntary official correction, as much so as if it had occurred in an opposite direction, and surely no agent would allow it to pass unnoticed if 22*l.* 10s. had been inadvertently given instead of 220*l.* 10s., intended as the correct estimated value. There certainly would be no time lost in correcting such an error in that direction.

A great deal of importance, as I have already intimated, is attached by outside shareholders to the agents' reports of reputable mines as published in the *Mining Journal* from week to week or month to month, as the case may be, and to many they are the only channel of information upon which they rely and frequently act. There is, therefore, a sufficient reason why anything and everything of a misleading and damaging tendency should be suppressed as soon as possible.

OBSERVER.

MINE SURVEYING.

SIR,—I had hoped that some one, at least, of our advanced young men who claim to be well up in the science of Mining would have come to the aid of your correspondent, who modestly signed "Ignoramus," in the *Mining Journal* of May 22; but, as no one has done so, and he appeared to be earnest in the matter, I will do my best to render him assistance. If he had stated whether the shafts included in his operations were perpendicular or inclined, one might have been better able to determine from what cause the error he so repeatedly encountered arose. I must, however, premise that one or both of the shafts were inclined, and that he must have drawn them on the plan the full length of their measurement or depth, according to scale. If he did that an error was inevitable. The measurement of an inclined shaft and a line perpendicular to the instrument used in taking its angle of dip, and bearing respectively to any given level or depth, must be regarded as the two sides of a right-angled triangle, the base of which only must be drawn on the plan, and will appear precisely in the place of the hypothenuse line of greater or less length, according to the angle of dip or declination by which the base of a triangle in all surveying is affected. If that had been properly done, and the work found to be incorrect by the lines on the plan failing to meet at the terminal point, the surveyor should look to himself, his instrument, or some local influence, such as the presence or proximity of iron, for the cause of failure.

If a survey be properly made the lines above and below ground will be correspondingly correct in their relative positions; but, if a discrepancy should appear, an error may be safely assumed which must be "*instrumentally*" corrected, and not by allowance for variations, which should not and do necessarily exist.

Perhaps your correspondent would receive assistance from consulting Budge's "Guide" or Rickard's "Manual of Mining"—the latter, unfortunately, now out of print.

ROBERT KNAPP.

Lanrwst Lead Mines, June 1.

ROMAN GRAVELS MINE.

SIR,—I cannot agree with "Shareholder's" unalloyed satisfaction with this mine, nor with its recent management (see *Mining Journal*, May 1). The dividends were successively raised in 1873 and 1874 from 5s. to 7s. 6d., and again to 8s. 6d. quarterly, with promises of increased returns from the agent; the shares went up to 19 and 20; the reserves were stated to be worth 507,375*l.* in April, 1873. Then we had dividends delayed, first for four months—when we were promised that the deficiency would be made good by the end of the year—then for another four months, and now for five months, the shares of course falling to little more than half their value, and we are told to admire the prudence of the management. Nothing whatever that ought to have been unforeseen has occurred; the mine has opened out fully as well as was expected, and it was most imprudent—to use the mildest language—of the directors to increase dividends and force up the price of shares while so much of the shaft and other dead work of a necessarily uncertain nature remained to be executed. Let us have no more talk of prudence. It looks much more like the pressure of some Stock Exchange interest to force up the prices temporarily. There is another matter which should be discussed. The shareholders should claim to have their profits divided quarterly, whatever they are—not left to accumulate indefinitely to make up some fixed sum. Most people's payments have to be made quarterly, and it is most inconvenient not to know each quarter what your income is. The practice of announcing dividends at irregular periods is a thing that can only favour Stock Exchange operations. It is most unbusiness-like; it confuses accounts, and renders the balance-sheets of successive years not fairly comparable, and it is contrary to the practice of all railways, and other public companies, and of most mines. I trust that my brother shareholders will consider this point, and insist that their profits, whatever they may be, are divided quarterly.—*June* 1.

ANOTHER SHAREHOLDER.

WEST CHIVERTON MINE.

SIR,—Having this day received a letter from the manager of our mine in reply to one from me in reference to a rumour in circulation of a recent improvement in the mine, of which I had received no official report, I forward to you a copy, and shall feel obliged by your giving it space in the columns of your important Journal. The estimate of profit for the next meeting—1500*l.*, equal to 10s. per share—must be regarded as highly satisfactory, especially so as one or more of the agents positively asserted that a loss of 500*l.* per month must result from continuing operations. It is being reported that the present management are working the mine unfairly, &c.; the reason for such unfounded assertions are obvious, adverse rumours and reports are certain to be freely volunteered by certain parties, consequently it behoves shareholders to receive such with caution. It is, at all events, gratifying to find by the concluding remark of Capt. Southey that there is no foundation for such unjustifiable reports, after stating he can see his way pretty safely for 1500*l.* profit, adds—"and that, too, without impoverishing the mine—in fact, our reserves will be increased."

GRANVILLE SHARP.

Gresham Buildings, June 1.

June 1.—In answer to yours of the 29th ult., I beg to say in our report sent you on the 19th ult. we valued the winze sinking below the 130 to be worth 55*l.* per fathom, and on the 26th Captain A. James, who came here to inspect the mine for Mr. W. Gundry, valued the winze at 70*l.* per fathom. In valuing points underground I like to be on the safe side, if possible, and for the guidance of the shareholders would rather be under the mark than over. I think you will remember my answer to query from the committee and yourself at the last meeting, that I could see my way clear to give 1000*l.* profit by the next meeting. I have now much pleasure to inform you that I can see myself pretty safe in saying that the profit will be at least 1500*l.*, and that, too, without impoverishing the mine—in fact, our reserves will be increased.—R. SOUTHEY.

ST. PATRICK LEAD MINE.

SIR,—The latest reports from this mine already confirm the hopes entertained of being able (immediately) to strike large bodies of ore, the expensive work of timbering and securing the engine-shaft being now completed, and the two important cross-cuts have already began to be driven to intersect the east and west main veins or lodes, and the rich flats or pipes of ore in the dark limestone, which are producing such great riches in the adjoining mines. The first is at 120 yards from surface, in the white carboniferous limestone; and the second at about 90 yards, in ground of a most congenial nature, where it is composed of a mixture of several mineral gossans, certain indications of coming wealth. Any day may now bring the inteligence of this much-to-be desired object, and when the mere nominal capital (6500*l.*) is considered, together with the fact of the enormous dividends earned by the adjacent mines in a comparatively short period on large capitals, and the inexpensive way in which the ore is prepared for the market, at something like 12s. per ton, it is not to be wondered at that these shares should be considered a good investment by those acquainted with the rich Flintshire district of Holywell.

SPECULATOR.

MINING IN COMBMARTIN, NORTH DEVON.

SIR,—In the Journal of April 24 you published a letter of mine respecting some operations which were being carried on at Girt, near Combmartin. The lode has been driven upon for some distance since that, and it has maintained its favourable character. About a week since another lode about 3 fms. to the south has been cut; it is about 4 ft. wide, composed of a beautiful flookan, spar, and capel, and though only yet seen about 5 ft. from surface it carries ore throughout; the flookan produced large grains of lead. The last lode discovered dips about 2¼ ft. in a fathom, and the first about 5, but towards each other, and a junction will be formed in a depth of about 6 or 7 fms. The ground is of a most beautiful character, and my firm conviction is that the explorers will be rewarded for their trouble by getting a really good lead mine. This spot is close to the part which tradition points out as being the North Combe, which was so productive for silver in the reign of Queen Elizabeth, under the management of Sir Beavis Bulmer. It is encouraging to the owners of West Challacombe Mine to find such lodes opening up so close to and running into their property, where I hope shortly to see operations carried on with spirit.—*Combmartin, June* 3.

JOHN TREWEEKE.

[For remainder of Original Correspondence, see to-day's Journal.]

THE VAN MINES—MONTHLY REPORT.

June 2.—The lode in the 90 continues very strong and masterly, worth for lead ore 50*l.* per cubic fathom. The winze sinking below the 75, at a point 10 fms. west of shaft, for the purpose of ventilating the 90, is down 5½ fms. As soon as this winze is communicated to the 90 we shall resume the sinking of the engine-shaft for a 105 fm. level. The 75, east of shaft, driving upon the main leader is worth for lead ore 45*l.* per cubic fathom. The same level west of shaft, also driving upon the main leader, is worth 65*l.* per cubic fathom. The stripping of the lode to the full width in the side of this level, at 40 and 30 fms. west of shaft, are worth on an average respectively 32*l.* and 20*l.* per cubic fathom for lead ore. The 60, driving in the soft, is for the present suspended, and the men put to cross north near the end of the level, to prove the value of the lode, which we find to be 3 fms. wide, and worth for lead ore on an average 25*l.* per cubic fathom. The men are now taking down the lode on the west side of the cross-cut. The 60, driving upon the main leader, is still worth 100*l.* per cubic fathom for lead ore. The lode where stripped down at the side of this level, at the several points west of shaft, is worth on the average 32*l.* per cubic fathom for lead ore. The 10 stopes in back of the 60, east and west of shaft, are worth on the average 23*l.* per cubic fathom for lead ore; average width of the lode, 17 ft. The winze sinking in the country rock, at the present end of the 60 east, is down 5 fms. The stopes—14 in number—in back of the 45, east and west of shaft, are worth on an average 26*l.* per cubic fathom—mean width, 17 ft. The rise at the present end of the 45, west of shaft, is nearly communicated with the 30, and as soon as such is done that pare of men will be set to drive the 45 west. The stope in back of the 30, east of shaft, is worth 18*l.* per cubic fathom for lead ore. The two stopes in back of the 15, east of shaft, are worth 13*l.* 10s. per cubic fathom. The permanent levels are pushed forward with the usual dispatch.—Surface: All surface work is pushed on regularly. The machinery is in good working order. Our monthly sale takes place to-morrow, upon 500 tons of lead and 100 tons of blende.—WM. WILLIAMS.

GUNPOWDER.—Mr. G. HAYCRAFT, of Faversham, has patented some improved machinery for the manufacture of "pebble" gunpowder. The improvements consist, (1) in the substitution of wood or metal rolls having adjustable cutters, for the fixed cutter rolls therein described, whereby cubes of different sizes may be produced in the same machine.—2. In the employment of adjustable intermediate wheels, so as to ensure the gearing of the rolls together at all times.—3. In dispensing with a canvas backing for the press cake while under the action of the cutters, and instead thereof, passing the endless felt on which it is fed thereto entirely around the tube of the bottom roll or knife.

Meetings of Public Companies.

TANKERVILLE MINING COMPANY.

The annual general meeting of shareholders was held at the offices, Austinfriars, on Tuesday,—Mr. ROBERT WILSON in the chair.

The LONDON MANAGER read the notice convening the meeting.

The report of the directors was read, as follows:—

1. In presenting you with the usual full report from Capt. Waters, your directors feel satisfaction in pointing to his conclusion—"That a steady and very considerable improvement has taken place in the mine since the last general meeting, but especially in the lode from the 130 to the 152 fm. level. And if we spoke hopefully of the future of the company in August last, and hoped not in vain, we can to-day speak with a degree of absolute certainty with respect to the future. We have sufficient ore ground opened from which to get 150 tons per month until, and beyond, the time required to lay open the mine at the 162 fm. level. We expect to open out the next section of ore ground faster than we take away from above the 152, and, being persuaded that each succeeding level will show some improvement on the the other, we look forward to better days than any yet seen here."

2. The balance-sheet has been circulated for some time, and you will have observed that in the twelve months there have been sold 1177 tons of lead ore, for 17,155*l.* 9s., or an average of 14*l.* 11s. 6d. per ton, against 1102 tons, for 16,805*l.*, or an average of 15*l.* 5s. per ton in the previous year.

3. The balance at the credit of revenue account was 6357*l.* 18s. 10d., out of which your directors have lately paid a dividend of 3000*l.* But beyond the above balance there was a sum of 576*l.* 9s. paid out of revenue on capital account, making now the total amount of the latter indebted to revenue 3715*l.* 5s. 6d. The total amount divided among the shareholders is now 40,300*l.*

4. One of your directors—Robert Wilson, Esq.—goes out of office, and offers himself for re-election, as also do the auditors.

The report of the manager was read, as follows:—

June 1.—At the commencement of this, my fifth annual report, I am induced to revert to preceding reports and statements, and to review the history of the company, together with the facts established by the output of the mine, and matters associated therewith, from March, 1870, to April, 1875. The company took possession of the mine and commenced operations under very favourable auspices. My reports went fully into the geology and collateral subjects bearing on the mines of the district, showed that strong lodes, charged with considerable quantities of ore, existed, and must necessarily exist, especially in Tankerville, under the conditions said to be present, and this being so, that a long and prosperous career was before the shareholders. No man, I should think, engaged in metallic mining attempts to draw a line, a fixed line, from which to argue out the why and wherefore, the extent of the prizes, the precise locality of the blanks, and so on *ad infinitum*, the question being one that cannot be dealt with like a problem in Euclid. But granting all this, I repeat what I have often said before, that Tankerville is a splendid property, the lodes now under development, and those yet to be wrought, with the rich and extensive runs of ore in sight, being of such a character as to warrant my holding it up to you—nay, I do conscientiously hold it up to you—as a very lasting dividend-paying mine.

I have a collection of facts taken from the cost sheets monthly, showing the quantities of ground removed for shafts, winzes, cross-cuts, levels proper, and stopes, together with the account of sales of lead, and average yield of ore per fathom, to the end of April last, an epitome of which may not be out of place here:—

	Fms.	ft.	in.
Shafts sunk in the country and on the lode	193	2	7
Winzes ,, ,,	121	2	2
Levels ,, ,,	301	1	0
Ground sloped ,, ,,	1598	1	0
Cross-cuts in the croantry	167	1	9
Total	2379	2	6
And deducting dead ground	284	1	9
The number of fathoms mined on the lode is	2095	0	9
The sales of ore over the same period amount to 7917 tons 12 cwts., realising	£109,115	2	6

Dividing the quantity of lead, 7917 tons 12 cwts., by the total fathoms of ground, 2095, gives 3 tons 15 cwts. 2 qrs. 9 lbs., which is the average yield of ore per fathom throughout, and looking over the large heaps of skimmings from the jigging sieves and tailings from the round buddles stored up until suitable machinery for washing them be erected, which heaps contain ore in quantities that will pay a profit of at least 25 per cent. on the cost of making the same marketable; taking this with the ore actually sold, the average yield of the lodes from first to last may fairly be put down at 4 tons per cubic fathom. The total amount of dressing cost, including the salary of the agent in charge of the department, paid, and to be paid on Friday next, is 3053*l.* 6s. 3d., which dissected gives an average of 7s. 8½d. per ton delivered into wagons. The profits divided amongst the shareholders to the date of the present balance-sheet amount to 37,200*l.* And contrasting the state and condition of the mine and plant in March, 1870, with the general aspect of things now, and going minutely into the heavy and very expensive permanent works carried out at surface and underground (paid for to a considerable extent out of revenue), I do think the profits are as great as could reasonably have been expected. I have gone thus fully into matters that you may, if disposed, compared my reports with the facts deduced from the accounts, and be able thereby to form your own opinions as to the real merits of the mine, and to what extent our judgment and our words can be relied on in the future. One other remark and I conclude this long preface to my report proper. Had the lines chalked out in my first general report to the company been followed, and the returns of lead not pressed for until they could be drawn through the new shaft, and sent through improved machinery to market, my opinion is Tankerville would never have been under a cloud, but on the contrary, that profits would have been continuous, and the sum total greater than is shown to-day. The 74 fm. level, driving east of the old shaft cross-cut to prove Tankerville lode in the ground parallel to the ore ground in the old mine, is now 15 fathoms from Watson's engine-shaft, on a lode 3 ft. wide, worth 14*l.* per fathom. There are several lodes (some on the south and others on the north side) to be cut into from this level as we go forward towards the shale, lodes that yielded ore in the upper sections of the old mine, and which I expect to see profitably productive when developed in depth. The present drivage is a pioneer level, and if attended by results equal to our anticipations we shall then push forward the other levels in regular order from the 82 downwards, and so lay open a great and deep mine without having to sink for it. The 74, west of Watson's, is driven 11 fathoms, but the end is not yet forth to the junction of the south lode; this drivage will be resumed presently to prove both lodes west of the intersection.

The 82 is driven west 13½ fms., and suspended under circumstances similar to those in the level above. The 92 is driven west 17⅛ fms., mostly the whole distance in profitable ground. No. 1 stope in roof of this level, west of shaft, is worth 70*l.* per fathom. No. 2 stope, in same level west, is worth 21*l.* per fathom. This run of ore is standing whoke between the 92 and the 102. The 100 fm. level is driven west 14 fms. 2 ft. on the line of a bed of the country to the south of the main lode. A cross-cut will be driven north and the vein laid bare and worked in due course. The south lode is cut into at this level and opened on for 4 fms. in length. This lode is standing above the level, where it is worth 21*l.* per fathom, and below, where it is opened up for stoping by a winze gone through to the 110, the yield is worth 30*l.* per fathom. The 110 is driven west 10 fms. 2 ft., and like the level above, nearly the whole distance by the side of the main lode. This matter will be attended to and the ground explored forthwith. The south lode is being worked on in the roof of the said level, as before stated, but the ground is standing whole along the bottom. The 120 is driven west 14½ fms.,, the whole distance in productive ground. The winze sinking below this level, close up to the end, is down 8 fms., the value of the lode throughout being 50*l.* per fathom. The winze will be holed to the 130 in course of the next fortnight, and the ground available for stopes. The stope in the back of the said 120 west is worth 21*l.* per fathom. The 130 west is driven 18 fms., the last 8 fms. on a bed of country to the south of the lode. We have men here cutting into the side for the purpose of finding the lode to be seen in the above-named winze. The stope in the back of this level, west of shaft, is worth 21*l.* per fathom. The 140 west is driven 29 fms.; the lode for 22 fms. varying in value from 30*l.* to 150*l.* per fathom, the last 7 fms. being worth about 15*l.* per fathom. We are pushing this level forward with a view of finding another big deposit of ore, and calculate that on reaching the junction of one or other of the lodes seen in the 120 cross-cut north, and which must come into the main lode as we go west, our expectations will be realised. No. 1 stope, in roof of this level, west of the winze, is worth is worth 30*l.* per fathom, and the same value may be put on No. 2 stope, west of the former. No. 1 winze below the 140, sunk at a point 12 fms. west of the shaft, and holed to the bottom level, passed through a lode worth on the average 70*l.* per fathom. No. 2 winze below the said level, and 8 fms. west of No. 1, is down 7½ fms., and communication made from it by a borer-hole with the rise from the level below. We have been sinking here in the middle of a wide vein and rich course of ore, the full value of which, from not having cut through the vein on either side, we cannot yet estimate, but the part carried is worth 100*l.* per fathom. We know from sundry trials made by boring, &c., that ore of equal value is left standing by the side of the winze, to be taken down when the stope men get to it. In other words, we have passed through a lode here which may be valued at about 200*l.* per fathom.

The north part of the lode, cut into by a cross-cut of 10 ft., which is driven at a point 9 fms. from Watson's shaft and 11 fms. east of the said No. 2 winze, is 2 ft. wide, varying in value from 4 to 6 tons, or (say) 75*l.* per fathom on the average. We have opened on the lode for 5 fms. in length, and there is a rich lode standing whole all the way along the roof of the level, which will be laid open for stoping in regular course. It is my opinion that this vein has fallen into (formed a junction with) the main lode between the 140 and 152 fm. levels, and, therefore, helped to increase the width and value of the vein in the latter level. The 152 fm. level is extended west of shaft 21½ fms., the whole distance on a continuous run of ore, the part of the lode carried in the drivage being worth 3 to 10 tons, or (say) an average yield of 100*l.* per fathom. We have not seen either the foot or hanging wall of the vein for certain anywhere in this level, but men are at work cutting into the sides to prove them. About 9 ft. behind the end we are now into the north side 5½ ft., where the ore course shows well, the cross-cut still being in lead. The lode in the said 152 end west, with the part cut into as above named, we value together at 120*l.* per fathom. The main run of lead seen in No. 2 winze, at the 140 fm. level, is, according to the regular dip, still in front of the bottom end some 3½ fms. This latter depo it, where it passed through the winze, was valued at 15 tons per fathom, and we have no reason to expect any falling off in yield when ore is met with at this level, and seeing how the lode generally has improved at other points between the 140 and 152, we are persuaded that the richest lode seen in the mine for a long time past is on the eve of being discovered in the before-mentioned end. The rise in this level, 16½ fms. west of shaft, is up 3½ fms., the lode being of similar value to that associated with No. 2 winze. The stope in same level, west of shaft, is worth 45*l.* per fathom, and improving. The stope, west of No. 1 winze, is in a course of ore worth 150*l.* per fathom. There are two divisions of lode here, one being Tankerville lode proper, and the other we think is the north lode seen in the 140 fm. level. A plat is cut, arrangement for tramway made, the water taken up, and the shaft in order and being sunk below the 152 for another level. No time will be lost on our part in pushing down to the 162, which depth we hope to reach in about six months from next setting-day.

General Remarks: It will be seen by the foregoing that a steady and very considerable improvement has taken place in the mine since the last general meeting, but especially in the lode from the 130 to the 152 fm. level. And if we spoke hopefully of the future of the company in August last, and hoped not in vain, we can to-day speak with a degree of absolute certainty with respect to that future. We

have sufficient ore ground opened from which to get 150 tons per month until and beyond the time required to lay open the mine at the 162 fm. level. We expect to open the next section of ore ground faster than we take away from above the 152, and being persuaded that each succeeding level will show some improvement on the other, we look forward to better days than any yet seen here.—ARTHUR WATERS.

The CHAIRMAN said the directors had much pleasure in meeting their fellow-shareholders for the first time in London. The last meeting was held only 10 months since, when the mine was not looking by any means in a prosperous condition; therefore, it must now be exceedingly gratifying to all concerned that during such a short interval of time the mine had so materially improved. Ten months since the returns were only 70 tons per month, whereas now they were easily returning 150 tons. It must be very gratifying to Capt. Waters and also to the shareholders to find their mine opening up in such an encouraging manner. Capt. Waters had predicted that by driving west they would come into the good run of ore seen in the levels above, and the drivages had only yet been extended some 20 fms. west from the shaft. The distance between the former bunch of ore and that now being opened up had not been very great. This bunch would come to an end driving westward, but there were indications of another bunch coming in, and the general opinion was that it would prove the largest yet seen in the mine, as it would be found against the shale. There was a shareholder present who inspected the mine last week, and who had written him (the Chairman) a letter to the following effect:—

It is pleasing to see quantities of ore dressed, also to know that, if desired, larger quantities can be commanded from the mine. I strongly advise that the present 150 tons per month be kept, and only supplemented by a 200 tons sale as the run of ore opens out. You have a richer and a larger run of ore than any I have seen in the neighbourhood, and the mine can now return 50 tons a week, better than 50 tons a month at my former visit in August last, and to all appearances the next level will increase in riches. The dip of ore is from the shaft, thus permitting sinking, driving, and opening up reserves of ore at the same time. The great run of ore about the 140, 152, also in the bottom of the 152, for fathoms in height and length, induces me to entertain a very high opinion of the value of the property.

The report of Capt. Waters had gone so fully into the position and prospects of the mine, and the report of the directors and balance-sheet also so fully explained the financial position of the company, that all he (the Chairman) need do was to congratulate his fellow-shareholders upon the way in which the mine was opening out. He fully believed that at their next meeting they would be able to submit even a more satisfactory report than that now presented—it was true Capt. Waters had not promised increased returns, but there was no doubt he would do his best to give them before the next meeting. (Hear, hear.) He then moved that the report and balance-sheet be received and adopted.

Mr. PALIN seconded the proposition.

Mr. SIDDENS asked for an explanation of the low price realised by the last sale of Tankerville ore compared with the Roman Gravels sale.

Capt. WATERS was certain there never was a better parcel of lead sent out of Shropshire or the kingdom than the last parcel from Tankerville. He was quite certain it would yield 82 per cent. of lead out of the furnace. The week previously, when the Roman Gravels ore was sold, the market for lead was firm, but when the Tankerville sale was made the market had become easier.

A SHAREHOLDER wished to know the cause of the depreciation in the shares during the last three weeks, seeing the reports had been so good? Upon looking at the transfer-book——

Mr. MURCHISON reminded the shareholder that he had not seen the transfer-book, which was not open to the inspection of shareholders. What the shareholder had seen was the register of members, which, according to the Act of Parliament, was open to shareholders.

The SHAREHOLDER wished to know how many shares had been transferred during the last month, or since such good reports had been published, or since the dividend had been declared?

Mr. PALIN should recommend the Chairman not to answer that question.

The SHAREHOLDER was sorry for that, because it showed weakness.

Mr. CREMONINI would like to ask that gentleman how many shares he held. He should like to know whether parties putting such questions, and desiring such information, held a stake worth consideration?——The SHAREHOLDER said he held 20 shares.

Mr. HOWLAND had the opinion of a very high authority, who held that the shareholders had a right to see the transfer-book. He presumed this undertaking was a co-partnership, under which there could be no private books. He must say he did think it a most suspicious circumstance—he held 190 shares, and never "jobbed" in them; he protested against any book being withheld; it was dishonest to do so, even if the Act of Parliament gave the directors power to withhold the transfer ledger. As a matter of gentlemanly feeling, confidence, or honesty, any such book should be shown to a shareholder.

The CHAIRMAN said there were no secrets the directors wished to keep from the shareholders.

Mr. CREMONINI agreed that every shareholder should be allowed to inspect any book that he was entitled to under the Act, but none others. He wished, however, to draw attention to another question—the Chairman at the last meeting said the directors would not take the remuneration fixed for them under the Articles until a dividend had been paid.

The CHAIRMAN said what he stated was this—if the mine did not pay a dividend during the next 12 months the directors would agree to reduce their fees.

Mr. CREMONINI was misled by not having a reporter present. He felt disappointed that no reporter had been present, and the report had been so constructed that he was not in a position to refute the statement made by the Chairman. As regards the present state of affairs, he might inform his fellow-shareholders he had taken a deep interest in this company, so much so that when he appeared at the meeting on the mine he held only 20 shares; he then expressed his disappointment at not receiving a dividend, but such was his confidence that he increased his holding to 100 shares. From that time he had taken occasion to satisfy himself at the mine—where he once met the Chairman—as to its position and prospects. He had been very pleased with all he saw, and from what little judgment he could bring to bear upon the subject, he could testify to the statement set forth by Capt. Waters in his report. From what he had seen himself he felt thoroughly convinced that—unless, indeed, the ore had been placed there purposely—they had a mine that must prove a success. From the changes he had seen during the last 12 months he should be very much disappointed if his expectations were not realised during the next 12 months.

Mr. GREENSILL had certainly understood that the directors were not to take full fees until a dividend had been paid. He could bear out the statement made by Mr. Cremonini as to the position and prospects of the mine. He wished to know what number of shareholders attended the meetings on the mine, because he still advocated the mine as the proper place to hold the meetings. He agreed with Mr. Peter Watson, one of their directors, when he said at one of the meetings that the number of shareholders then present proved the advisability of holding the meetings on the mine, as thereby the shareholders were afforded an opportunity of seeing what was going on. He (Mr. Greensill) hoped that next year the meeting would be held on the mine.

Capt. WATERS, in reply to a question, stated that the western ends were 200 fms. from the shale.

Mr. HOWLAND said the "Bears" stated that the 152 west was already out of ore.

Capt. WATERS would not condescend to answer such a remark, but would refer the shareholders to his report.

Mr. PETER WATSON (director) thought it was time for some shareholder to ask whether this meeting had been assembled to discuss the buying and selling price of shares. After what Mr. Howland had said about the "Bears," it might be asked if there were any "Bears" present?

Mr. HOWLAND said it was to answer that question he wanted to see the transfer-book.

Mr. PETER WATSON said if Mr. Howland was a *bona fide* holder of shares, it was inexplicable why he should come here and attempt to depreciate other people's property by insidious remarks. A list of shareholders was at all times open to the inspection of shareholders, but by the Act of Parliament it was not lawful for one member to examine another's private account. The directors were doing all they possibly could for the interest of the company, and being the largest shareholders, were doing the best for themselves. The Chairman and directors held the same number of shares as at the last meeting. During the past 12 months they had suffered from an excessive drought and a severe winter; but, notwithstanding those heavy drawbacks, they had to-day placed before the shareholders a most satisfactory statement. The last meeting took place in August, only 10 months since, and if this meeting had been postponed two months longer a much better statement of accounts would have been presented than that now submitted. At the last meeting he expressed a hope and belief that before long the mine would improve, and his anticipations had been realised—they possessed a wonderful mine. Capt. Waters had given them its history, and told them that from the commencement 7900 tons of ore had been extracted from 2905 fms. of ground, which, including slimes, had yielded an average not much under 4 tons per fathom. (Hear, hear.) He hoped the next meeting would be held on the mine.

Mr. MURCHISON mentioned that the present was the first meeting held in London. In reply to a question, he stated that 17 shareholders attended the meeting on the mine in 1873, and last year 25, when special efforts were made to make an attendance, owing to the notices of motion of given by shareholders; at the present meeting there were 29.

Mr. OLDING asked if the returns were maintained at 150 tons per month, shareholders could expect a quarterly dividend of 5s. per share?——The CHAIRMAN said that 150 tons per month would scarcely do that, with lead at the present price, but probably Capt. Waters would be able to make up the deficiency.

Capt. WATERS said with lead at the present price 150 tons would leave 1000*l.* per month profit. From the tenour of a part of the discussion, he wished to say he hoped the shareholders would not consider the improvement that had taken place since the last meeting was any slur upon the management. It seemed to him if the mine had not improved and there had been no dividend paid, the unpleasant discussion which had taken place would not have occurred.

In reply to a question, the CHAIRMAN stated that there were 16 years unexpired of the present lease, and that there would no difficulty in obtaining a renewal.

Capt. WATERS said he might take the opportunity to state that he had never "jobbed" in a single share in any mine with which he was associated. He had had shares, and had sold them; and bought at 18*l.*, and in August last year had lost 185*l.*

Mr. CREMONINI expressed his confidence in the direction, and also that Capt. Waters would increase the production if it were for the permanent advantage of the mine. He believed Capt. Waters was a conscientious and honest man, and that the mine would prove a permanently remunerative property, and if Capt. Waters chose he could return at once 200 tons per month.

The report was received and adopted.

The CHAIRMAN referred to a project for the construction of a tramway from the London and North-Western with the Snailbeach Mines. It was mentioned that by its extension to the Tankerville an important saving in carriage would be made.

Mr. Robert Wilson (the Chairman) was unanimously re elected director.

Messrs. Brandt, Stansfield, and Co., were re-elected auditors, with a remuneration of 10 guineas for their services during the past year.

Mr. PALIN proposed that the best thanks of the shareholders be given to the Chairman and directors for their great attention and care to the interests of the company.——Mr. PIEDNUE seconded the proposition, which was put and carried.

The CHAIRMAN, on behalf of his colleagues and himself, thanked the shareholders for this renewed mark of confidence, and he could only say that their best endeavours would continue to be given to promote the best interests of the company.

Mr. CREMONINI had much pleasure in proposing that a vote of thanks be given to Capt. Waters, who he felt convinced would continue, as hitherto, to do his best for the shareholders. He had unbounded confidence in Tankerville, and also in Capt. Waters, and had no doubt he had worked with the greatest intelligence and ability. He then proposed that the best thanks of the shareholders be given to Capt. Waters, Capt. Smitham, and the other agents.

Mr. HOWLAND seconded the proposition, which was put and carried.

Capt. WATERS said it was very pleasant to have the thanks of the shareholders, but the best thanks they could have was the satisfaction of seeing the mine responding to their expectations. (Hear, hear.)

A vote of thanks was also passed to Mr. Murchison. The meeting then separated.

KINGSTON CONSOLS MINING COMPANY.

The statutory meeting of shareholders was held at the offices, Gresham House, on Monday,—Mr. PORTER in the chair.

Mr. FORREST (secretary) read the notice convening the meeting.

The CHAIRMAN said they were all aware that this was the statutory meeting, which they were compelled to hold according to Act of Parliament, but it was proposed to take advantage of the occasion to communicate any additional information which shareholders might desire as to the position and prospects of the mine, and also with regard to the machinery which was ordered some time ago. Their very good friend, Mr. Richards, manager of the Devon Great Consols Mine, had joined the board, and being present to-day would probably speak more to the purpose than he (the Chairman) was likely to do.

Mr. RICHARDS said that his speech to-day would be a very short one. He had backed up his opinion by taking a large interest in the mine—he had been underground once when their worthy Chairman was present, and was much struck by the general appearance of the lode, which was a very masterly one, containing mineral from one side to the other. The vein altogether was something like 12 feet wide, and from the very fine metal he saw there he had been induced to go into the mine. Since then it had been found necessary, in order to work the property fairly, to put up a larger steam-engine, which, with the present whim-engine, would be sufficient for crushing purposes, and also for driving the dressing machinery. The machinery to be adopted would be upon the most approved principles; it is the best that could be adopted for that class of ore. With its aid they would be able to get on very well. His opinion of the mine was very strong indeed, and he fully believed they would find in it a very good thing. It would take time and money to develope it properly, and his opinion was very strong that it would yield good profits. He, of course, spoke as a miner, who could not always ensure the realisation of their expectations, but in this case he might say he was certain—that is, as a miner. If it fails he should be greatly disappointed.

A SHAREHOLDER asked how long it would be before the mine was placed in good working order?——Capt. RICHARDS said it would take three months to get the machinery to work. Shortly affer that—probably a week—the water would be out, when the mine could be fairly got to work.

The CHAIRMAN said the reason the water was in the mine was that the old engine was burning out such a large quantity of coal it was thought desirable to stop it and save the cost.

A SHAREHOLDER asked what the returns were likely to be?——Capt. RICHARDS said that could not be stated until the shaft had been sunk deeper, and a level or two driven. An expenditure of something like 5000*l.* upon the mine would, he believe, place it in a dividend-paying condition.

The CHAIRMAN said that capital to the extent of 15,000*l.* had been issued, but they had the right to issue 25,000*l.* They were told by engineers that would be ample to meet every requirement. Before they could work upon such a large mass of ore they must have a series of galleries whence to get at it. To do that required time. As soon as the machinery had been completed it was proposed to sink and cross-cut so as to intersect the lode and others known to exist, and every gallery driven enabled them to place at work so many more men. Everything looked well—he did not know how it could look better. There was a large quantity of ore on the mine.

Capt. RICHARDS, in reply to a question, stated that he expected to find the lode improve as depth was increased. There were already backs 30 fms. in length and 18 ft. high.

A vote of thanks was passed to the Chairman and directors, which concluded the proceedings.

ST. AGNES CONSOLS MINING COMPANY.

The annual meeting of shareholders was held at the London Tavern, on Monday,—Mr. J. B. REYNOLDS in the chair.

The SECRETARY read the notice convening the meeting.

The report of the directors stated that since the extraordinary general meeting operations have been carried on vigorously, with a view to proving the valuable lode recently discovered, and that with great success. The directors entertain no doubt that the lode is of as much importance as the managers anticipated, and they hope that within a comparatively short time another will be met with of equal value. The issue of the preference capital was freely responded to, and the result is that 4380*l.* has been applied for and allotted.

Operations are now in progress for putting up the necessary machinery, to which the Chairman alluded at the meetings above referred to, and the directors have been fortunate enough to secure for the sum of 500*l.* the whim-engine of North Roskear Mine, which is reported as being an excellent one, with cage complete, and it is questionable whether there is another equal to it in the county. The directors reiterate their conviction that the prospect before St. Agnes Consols Mine is a highly satisfactory one, and it is their earnest hope and belief that the shareholders will have large returns for their outlay. It will be observed that the returns of tin during the past 12 months have been small, and this is accounted for by the fact of the whole of the energy being concentrated on one point, and of course at the present moment, and, indeed, since the extraordinary meeting, the production of tin and copper has been continuous, and a satisfactory parcel of each is now preparing for sale. There are between 80 and 100 tons of mundic for disposal, which will give the proprietors some idea as to the large quantity, which was really a forerunner of the tin and copper ores now being laid open.

The report of the managers stated that in the engine-shaft at the 72, west of the south cross-cut, the lode is 3½ ft. wide, and worth for tin 15*l.* per fathom; in the same level, about 15 fms. further north, driving west in the junction of the flat lode and Wheal Rock, the lode is over 4 ft. wide, and worth for tin and copper ore 15*l.* per fathom; in the same level east in the junction the lode is worth for copper 8*l.* per fathom. The engine-shaft is now about 8 fms. below the 72; ground improved for sinking. The prospects of the mine are regularly improving, and as soon as the steam whim and stamps are got to work we shall commence stoping, and work the mine at a profit.

The CHAIRMAN said that it afforded the directors a considerable amount of satisfaction to meet their constituents upon the present occasion. The year embraced in the accounts had been one of considerable anxiety—a great deal of work had been involved, and the shareholders would be glad to hear that the success of their endeavours had been assured. He did not know there were any very special features to which he need call attention in the balance-sheet; it would be observed that the calls on the ordinary shares had been responded to in the most satisfactory manner, considering the arrears were only 89*l.* 10s.—a fact which spoke volumes for the wisdom of the shareholders, and for the active endeavours of their excellent secretary. The expenditure had been in some cases heavy, but he could assure the shareholders that the greatest economy had been observed, and every possible effort made to economise to the utmost extent. It would be seen by the directors' report that no improvement had taken place in the price of tin, and that the mining interests continued so depressed that it became all companies to observe the strictest economy; this company possessed good and substantial assets, and the shareholders might consider, he believed, that the financial position of the company was highly satisfactory. The shareholders would have read the report of the manager, showing the present position of the mine itself, from which it would be seen all that had been said from time to time had been fully borne out by facts. They would also observe with very great satisfaction that the main object for the attainment of which the company was started would be shortly reached, and in all probability they would have two very valuable lodes from which to make returns. He knew persons were ready to render a helping hand for the welfare of the company, and for the satisfaction of the shareholders; the board of directors were thoroughly united—indeed, he did not know he had ever worked with gentlemen with greater harmony and satisfaction than with those who had the management of this company. The books were kept in the most admirable manner, and anyone who would take the trouble to look through them would be very pleased with the way in which the accounts were kept. He then moved that the report and balance-sheet be received and adopted.

Mr. WOOLLEY seconded the proposition.

The CHAIRMAN, in reply to a series of questions put by Mr. Budd, stated that the arrears upon the old shares amounted to 6*l.* 10s., and on the new shares 28*l.* It was expected that the Wheal Kitty lode would have been reached long before this, but it was impossible to make calculations which would prove to be perfectly correct in such matters as these, and when those calculations were made the inspection of Wheal Kitty, in order to ascertain the bearing or dip of the lode, had not been made. The mundic would probably realise about 100*l.*; it had been referred to in the report by the directors only as showing very favourably for the lodes which had been discovered there, and from which they were now making their returns. As to the accounts, there could not be the slightest objection to sending them out prior to the meeting, although if that were done they could not be made up to so recent a date—that matter, however, should receive consideration. Arrangements had been made for the immediate erection of the steam-whim and stamps. It was not the intention of the board to issue any more of the preference shares, and the whole amount would have to be paid on those issued before any dividends were paid.——The report and accounts were received and adopted.

Upon the proposition of the CHAIRMAN, seconded by Mr. WOOLLEY, it was unanimously agreed to re-elect Dr. Brookhouse a director, and Mr. Charles Tudor Henry (a holder of shares to the amount of 1500*l.*) was elected to the vacancy on the board occasioned by the retirement of Mr. Vaughan. Mr. Swaffield was re-elected auditor.

It was resolved that the sum of 250*l.* be voted to Mr. J. B. Reynolds in consideration of having signified his intention to forego remuneration as managing director, and that in future he be requested to accept 100*l.* per annum.

The CHAIRMAN appropriately acknowledged the vote. While it would not relax his exertions to promote the interests of shareholders, it would at the same time benefit the company.

Capt. WM. VIVIAN, the manager, said he was very pleased to meet the shareholders under such favourable circumstances. He thought they were about to realise some of their expectations.

A vote of thanks to the Chairman and directors concluded the proceedings.

VAN MINING COMPANY.

An extraordinary general meeting of shareholders was held at the offices, Austinfriars, on Thursday,—Mr. W. PAGE in the chair.

Mr. W. J. LAVINGTON (the secretary) read the notice convening the meeting.

The CHAIRMAN said before proceeding to move the confirmation of the special resolution passed at the meeting held on May 14, he had the melancholy duty to announce that since they last met the company had sustained a serious loss by the death of their late Chairman—Mr. Thomas Clement Mundey—who expired somewhat suddenly on May 27. It was unnecessary for him to state that he had performed his duties in the most careful manner in promoting the interests of the company, and that the directors had lost a very able colleague. He then moved the confirmation of the following resolution:—

"That an underlease be granted to the East Van Mining Company (Limited) of a portion of this company's sett, situate at the eastern end thereof, and containing by estimation 22 acres or thereabouts, at a royalty of 1-7th, and in other respects upon and under the same terms and conditions as the same is now held by this company."

The motion having been duly seconded, was put and carried.

The meeting then separated.

SOUTH AURORA CONSOLIDATED MINING COMPANY.

The adjourned fourth general meeting of shareholders was held at the City Terminus Hotel, on Wednesday,

Mr. SPRATT in the chair.

Mr. C. CADOGAN (the secretary) read the notice convening the meeting.

The report of the directors (which appeared in last week's Journal) was taken as read.

The CHAIRMAN said that in January last the directors forwarded to the shareholders a very full report of all the business that had been transacted up to that time, but as the accounts had not then been received it was necessary to agree to an adjournment. No one could regret more than the directors that they were unable to-day to declare a dividend. Shareholders would bear in mind that the present board were not the original directors of this company, and, therefore, were in no way responsible for having placed their money in this concern. Their duty was to do the best according to their ability, and endeavour as soon as possible to bring about some result in the shape of dividends. When the present directors took charge of the affairs the company had mines said to be of great value, but unproductive, and *ex nihilo nihil fit*. In this most unfortunate position they had to pay rates and taxes amounting to 400*l.* per annum, insurance of the property 400*l.* to 500*l.* per annum, besides which they had to employ a watchman pursuant to the terms of the policy, entailing a further expenditure of between 300*l.* and 400*l.* per annum. Therefore, they had to expend some 1100*l.* a-year out of their small capital without any return to set against it. In that state of things they endeavoured to reduce the expenditure by ending the engagement with Dr. Goodfellow, to whom they paid 2000*l.* per annum; they did not get rid of that gentleman until there had been an outlay of 15,000*l.* in endeavouring to make the property productive. They had ceased to carry out explorations until the neighbouring property—Eberhardt and Aurora—had proved the value of their ground in depth. He was very pleased to find that in going down more ore was being found, and that there was a hope that dividends would soon commence to be paid. Fortunately they had upon their board one of the directors of the Eberhardt Company who knew the property very well, and who spoke very hopefully as to the future, but he (the Chairman) must confess he was not prepared to advise the expenditure of any more money in carrying out further developments on the South Aurora Mine. They regretted very much indeed they had been unable to realise the profit resulting from the treatment of the tailings; they had endeavoured to work them, and for that purpose had applied to the White Pine Waterworks, but the price asked for the water was so fabulous that they preferred to keep the tailings until the time arrived that either water could be obtained cheaper or the property sold. A matter then came before them of which they had been previously ignorant—in buying the property they bought all the appurtenances of the mill, which included the pipes conveying the water from the White Pine Waterworks to the company's mill. Those pipes had cost the company many thousand pounds, and they had been advised first to claim a rental from the White Pine Waterworks, inasmuch as they had been used by those works for the Eberhardt Company. They had made a demand, and the negociations were still on hand; finding those negociations were somewhat pressing, it was proposed to take such steps as was thought advisable, as they intended to make that a valuable asset. With regard to the mill, a discovery had been made for the treatment of poor ores, and if the experiments that are now being made should prove successful, he believed they would have an opportunity before long of using their mill for the treatment of customs' ore, ore which would not now pay to remove, but under this new process would not only pay to remove, but also yield a profit for washing. An idea had been thrown out at the board that a new company should be formed to acquire the South Aurora Mine and the mill, and having fixed a price, say to the shareholders if they were disposed to take shares in the new company to follow the "lead" in the mine—which had never been lost, although traced to a depth of 600 feet by means of the Diamond drill. The question was whether they would not be justified in obtaining an independent capital—especially seeing what was doing at the Eberhardt Mines—to follow the "lead" in the expectation of finding a bonanza; there would certainly be incurred an amount of risk, but on the other hand there were chances of profit. He thought that out of the small capital remaining in this company it would be improvident to recommend any further expenditure of capital on the South Aurora Mine. He had laid down a kind of policy in this company; they had a share capital of 300,000*l.* in the reconstructed scheme, and they were advised they must adhere to that sum; their object, therefore, was not to invest the capital, but to loan it, and he was bound to say they had a very fair prospect of success—loaning as the first charge, and then, in the event of success, possessing a very considerable portion of the mine in consideration of the advances made that had been fruitful to a certain extent, as they had been able to acquire 95,000*l.* in bonus shares. If they could develope those virgin properties, and make them successful, they would be able to say to the shareholders. Are you disposed to surrender those shares to the company, and take shares in the other company in which we have ventured, by which the capital may be reduced to some decent limits? If they could reduce their enormous nominal capital down to something like 50,000*l.*, they would then have a very fair chance of becoming a good company, paying satisfactory dividends. To do this they must be extremely careful about their funds, therefore he said—Do not invest your capital, but merely loan it. As far as his colleagues were concerned, they had strengthened his opinion from time to time, and would support him to-day if necessary. They had several pro-

positions before them by which they could carry out this plan; there were one or two which if after full investigation they went into would certainly give a dividend, although he did not say it would be a large one. With regard to the Canada Gold Fields Company, it would be recollected that the original proposition was to invest 10,000*l.* He was extremely sorry that at the time the proposition was made some gentleman limited the power of the directors to the small sum of 3000*l.*, because that had occasioned a loss of a great deal of time and some little temper in really deciding what they should do with regard to this property. A series of questions had been put to Mr. Egerton, and the purport of the replies was that 5000*l.* would be ample to put the Gilbert and Chaudiere claim into working order. Unfortunately the shareholders had restricted the directors to the expenditure of 3000*l.*: they had paid out of that amount 500*l.* to the old company; costs, 133*l.*; printing Articles of Association, &c., 59*l.*; and other items, 203*l.*; so that 1000*l.* was paid for necessary expenses out of the 3000*l.* set aside for working the property. As far as he was concerned he regretted immensely that that resolution for 3000*l.* had been passed; he felt that if the shareholders had any confidence that the directors were performing their duties honestly, and laying out the money to the best of their ability, they would at least give credit for their *bona fide* intention, and would, therefore, sanction an additional outlay. It was with these arguments that a further sum of 1000*l.* had been advanced on mortgage. Then cropped up another difficulty; if the directors in Canada claimed their fees it would swallow up this 1000*l.*, but they did not charge their fees. When he found more money was required, and it was merely a question of three weeks or a month in point of time, it did occur to him that they should have sufficient money to prove that "lead," but he was over-ruled. They were compelled to come here to say the reports of Mr. Egerton had confirmed the original representations, and, viewing the various internal differences, to ask for power to make further advances from time to time at the discretion of the board. They were not bound to advance one single penny, unless they were perfectly satisfied, to enable Mr. Lockwood to liquidate obligations incurred on behalf of the company, amounting to 1500*l.*; he (the Chairman) had arranged that he should give in consideration of the advance additional bonus shares to the value of 10,000*l.*, with this stipulation—that it should be the means of doing away with the colonial board. He might mention that the surface of the land comprised in these gold fields was no less than 18,000 acres, letting the alluvial deposits alone. Their own engineer believed in the property, after having lived there twelve months fully corroborating the good opinion of the Government Inspector. With regard to the Mammoth Copperopolis Company, the security held for the 2000*l.* advanced still remained in their hands; it had been reduced by the payment of 500*l.*, and they were regularly receiving 15 per cent. The Anguilla Phosphate Company, to which they had agreed to advance 5000*l.* on mortgage, possessed a property said to be of considerable value, and they had upon their board a gentleman who had already advanced a very considerable sum of money. As yet the company had only advanced 500*l.*, which was in the bank, and to that extent only were they at the present moment pledged. The directors believed in the property, and that the negociations pending would soon be carried out, which would enable the board to give a small return for the advance made. With regard to the Corsican properties, they had there an enormous field for enterprise; the concessions extended over an area of more than 30 square miles, containing valuable deposits of copper, silver, lead, and manganese, labour being cheap and abundant. Before entering into an arrangement to advance money, they stipulated that they should select their own engineer, but that the expenses should be paid on the other side. They sent out Capt. Glanville, who made a very satisfactory report. Then the time came when they had to expend large sums of money to prove the properties, upon which they deemed it advisable to have a further confirmation of their value, and accordingly sent out Capt. Trelease, who fully corroborated the former report; the result had been the appointment of Capt. Trelease as inspecting manager, having under him two engineers to take charge of the two mines. There were very great advantages in having this property; it was close at home, there were good roads, it could be worked chiefly by adits, and labour was good and abundant. It was contemplated to spend about 5000*l.*, not as an investment, but merely a loan, the company having the first charge upon the property. Having referred to some of the items in the balance-sheet, he concluded by moving the adoption of the report and accounts.

Mr. TOWNE seconded the proposition.

Mr. CHAMBERS thought the money in hand should be devoted exclusively to the development of the South Aurora Mine. Their director, Mr. Applegarth, was perhaps best able than any other gentleman at the board to give them information upon that subject, being closely associated with other properties in the neighbourhood.

Mr. GOWER would like to know the exact amount of the disbursements at the mines and mill in Nevada. He saw that the general charges at the mill had been 379*l.*, which seemed to have earned for the company 462*l.*

Mr. T. G. TAYLOR said a supplemental statement should have been submitted, showing the way in which the money advanced to the Canada Company had been expended.——The CHAIRMAN referred Mr. Taylor to page 9 of the report.

Mr. TAYLOR said as they had burned their fingers in that matter he did not think they should throw good money after bad. It was all very well talking about bonus paper shares, but he did not appreciate that way of making money. As to the South Aurora Mine, it was quite possible that terms might yet be arranged for an amalgamation with the Eberhardt Company. When he proposed that course some time since he was met by the objection that it was no use amalgamating with the Eberhardt Company because it had no money. Now, however, it was turning out to be a most perfect success.

Mr. GRAY had referred to page 9 of the report, but could not find the details as to how the 4000*l.* advanced has been expended.

Dr. BEATTIE could not understand any company of position giving away 10,000*l.* on paper for an advance of 1500*l.* in cash, but he had so much confidence in the board that he was perfectly willing to leave the whole matter in their hands. Lending the money upon mortgage was, no doubt, the proper way to use it. He did not know whether the attention of the board had been called to the desirability of making advances to several good home lead mines, as that might be more advantageous than advancing to foreign mines.

The CHAIRMAN said he had been misunderstood if shareholders imagined that the Canada Company had offered the 10,000*l.* bonus shares—on the contrary, the arrangement had been made with gentlemen who believed in the mine, and had advanced 15,000*l.* for its development. As to the charges at the South Aurora Mine and mill, he could only tell them the expenses were incurred by Dr. Goodfellow in travelling, visiting, and reporting upon many mines. Dr. Goodfellow's engagement expired in December. As to an arrangement with the Eberhardt Company, if Mr. Taylor could bring it about it would find a supporter in him (the Chairman). As to the way in which the 4000*l.* had been expended, that formed a matter for the shareholders in the Gilbert and Chandierie Company to discuss—the meeting of that company had been adjourned for a week, and he was unable to give further particulars. As to the bonus shares, if anyone was to blame it was himself. He told Mr. Lockwood that they valued their capital greatly, and could not think of advancing 1500*l.* of it without valuable consideration, hence the offer of ordinary shares upon which he had expended a considerable sum of money. It was at present merely a proposition to consider, as the money had not yet been parted with.

Mr. APPLEGARTH (a director) said with regard to working South Aurora Mine he had long been of opinion that it was a good property, and what the Eberhardt and Aurora Mines had commenced to develope, and would, he believed, still further develope, only confirmed his opinion. He did not think the South Aurora Company could use its money to better advantage than in the development of its South Aurora Mine. Supposing they expended upon it 10,000*l.*, and obtained the same results as were being realised at Eberhardt, South Aurora shares would soon be at par. It would be necessary to follow the "lead" to reach the ore. He had no doubt in his own mine that a much less sum than 10,000*l.* would develope the mine, and place it in a paying condition. If the capital were his own he would put it there, and that was the reason he recommended the shareholders to do so.

A SHAREHOLDER asked if the South Aurora Company took up the water pipes connected with the White Pine Waterworks whether it would stop the Eberhardt Company?——Mr. APPLEGARTH said it would do so most certainly.

The CHAIRMAN said they were now trenching upon delicate ground, and suggested that no further discussion should take place upon this question.

Mr. LANDAU said he should certainly oppose one single penny being expended on the South Aurora Mine. If the Eberhardt Company proved their property to be a valuable one so much the better for the South Aurora Company.

Mr. CHAMBERS had very strong reasons for saying that if 5000*l.* or 10,000*l.* were expended on the South Aurora Mine it would be the best expenditure the company could make.

The report and accounts were received and adopted.

The CHAIRMAN proposed the election of Mr. Applegarth as director, which was seconded by Mr. T. G. TAYLOR. An amendment was proposed that Mr. H. L. Phillips be elected to a seat at the board, which having fallen to the ground for want of a seconder, the original motion was put and carried unanimously.

Mr. Berghteil was re elected as director, and Mr. Ford was re-elected auditor.

The CHAIRMAN then proposed that the directors may, if they think fit, make such further advances to the Gilbert and Chandierie Company, and upon terms to be approved by the directors, to any sum not exceeding 6000*l.*, in such proportion as the directors, in their absolute discretion determine.——Mr. WILLIAMS seconded the proposition.

Mr. GERTON, the engineer who had just returned from the property, could not give any special details of the actual value of the property, because there had not been a pick put in the ground during the whole of last year. He went out as an engineer to put up the machinery. The water had been pumped out of one shaft which occupied three days, but it filled up in 24 hours. His hands had been tied in a way difficult to explain. On each occasion when the water was out; there was no opportunity of getting to the bottom of the shaft, as he had always been stopped. He considered it a very good property, indeed, at a price; he considered it well worth 25,000*l.* He was convinced the Gilbert and Chandierie "lead" alone, from the place where unworked, without any further portion of the mine or other quartz reefs, would turn out that money—that is, he considered it would yield a profit of 25,000*l.*, as he computed there was at least 50,000*l.* worth of gold in that space.

Mr. LOCKWOOD said his friends and himself had expended 10,000*l.* on the property in proving its value and bringing it into its present condition. He then explained at some length the origin of the company and its subsequent career, stating that it was never intended to be anything but a private enterprise. He had no hesitation in saying that the gold fields of Lower Canada were equal in value to those of California or Australia.

After some further discussion Mr. GRAY proposed "The previous question," which was seconded by Mr. BENNET.

Upon the amendment being put, fourteen hands were held up in its favour, and eight against it, upon which the Chairman declared the amendment carried; the original motion was, consequently, negatived.

A vote of thanks to the Chairman and directors closed the proceedings.

NEW QUEBRADA COMPANY.

The ordinary general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Thursday,

Mr. N. LEAROYD in the chair.

Mr. T. G. GILLESPIE (the secretary) read the notice convening the meeting, and the report and accounts were taken as read.

The CHAIRMAN said: Gentlemen, it will not be necessary for me to occupy your time with many observations—indeed, it would be difficult to add much to the report that has already been distributed, and which you have before you. I may, however, say that the directors meet you on this occasion with very much pleasure and satisfaction—satisfaction as to the nature of the information they are able to lay before you, and satisfaction also as to the grounds on which that information is based. For on this occasion we have not only our own ordinary sources of information—the letters from our agents in Venezuela—but we have the advantage also of the presence with us of Mr. Campbell Downes, who has just returned from Venezuela on the important mission which is mentioned in the report. You will remember, gentlemen, that at the last general meeting I informed you that there had been a proposal made to this company by the Bolivar Company with reference to a change of the sea terminus of the line of railway. It was originally contemplated, as you know, that the railway should be carried on to the island of Brava, and that there should be a pier there for the shipment of the ores. Very considerable doubt was suggested, and evidence in support of that doubt furnished, as to the fitness of that island for that purpose, and this company was requested to sanction a change of the terminus by the adoption of Tucacas as the terminus of the line, instead of Punta Brava. We endeavoured to obtain the best evidence and information that we could as to the propriety of that change, and we found the evidence to be extremely conflicting, and in this state of things it was determined that we should adopt Tucacas tentatively—as during a period of experiment—and an agreement was entered into at length between this company and the Bolivar Company, by which it is agreed that, for the present at least, we shall accept Tucacas as the terminus of the line, with an obligation on the part of the railway company to carry it forward to its original destination, if after an experiment and trial of that spot we should arrive at the conclusion that it is for the best interests of this company that it should be done. Gentlemen, the terms of that contract have been reduced into writing, and we shall be happy to give you any further information that you may desire. Now, this change rendered necessary many other changes. Among the rest, it rendered necessary considerable work at Tucacas—reclamation work, construction work of sheds, of wharf, of all the necessary apparatus for the shipment of the ores there, and we thought it desirable that someone on behalf of our company should go out expressly instructed and authorised to see what works were about to be done, and to approve them on behalf of this company. Primarily for that purpose we chose to send out Mr. Campbell Downes, a gentleman who had been in the country before as the representative of this company, who was well acquainted with the circumstances of this company, with the work in view, and whom we thought best adapted to do the particular work then desired to be done. Mr. Downes went out, and in conjunction with the engineer of the railway, has determined on plans, and he submitted to the boards of this and the Bolivar Company plans which we believe are well calculated to effect the object we have in view. Therefore, in reference to this, as in reference to everything else, save our own home concerns, we have the advantage of Mr. Downes's information and evidence. (Hear, hear.) Mr. Downes was also instructed to go at the earliest possible moment to the mine, and if possible to visit the mines twice, immediately on his arrival and immediately before his departure. He was not able to do this, but he did visit the mines. He spent between a fortnight and three weeks on our property, during which time he made himself thoroughly acquainted with all that was being done there, and he has reported everything in the greatest detail to the board. He has presented us with a very long and exhaustive report, I may say a very excellent report indeed, and we shall be very happy to give any information from that that the shareholders may desire. It was too voluminous a document to be published and sent to all the shareholders, and moreover it dealt with matters—affecting our officers for instance—which it would not have been wise to make public. But it will enable us to answer more fully and in greater confidence than we could otherwise have done any questions that shareholders may choose to ask us. Then, with reference to the mines, I am able to say that all we had previously said to you is confirmed as well by the latest advices from Mr. Richardson as by what has been reported to us by Mr. Downes. (Hear, hear). There is, I believe, no reason to doubt that the mines are all that we have hitherto believed them to be, and further than that I am able to say to you that our superintendent now reports that he has no doubt of being able to fulfil easily all the conditions of our contract with the Bolivar Company. You know we are under obligations to them to provide a minimum of 20,000 tons of ore per annum, and our superintendent reports that he has no doubt of being able to fulfil that obligation. That to us is an exceedingly satisfactory assurance, and Mr. Downes expresses his conviction that Mr. Richardson is not speaking too strongly in very confidently expressing that opinion to us. (Hear, hear.) Well, gentlemen, we have not had all plain smooth sailing during the last half-year. There have been circumstances in the country that have been unusually and exceptionally adverse—a rainy season longer and more severe than has been known for 30 years, and a revolution which lasted longer than we at first anticipated it would. But I am happy to say that all those adverse circumstances have disappeared, and that our last intelligence is that work is rapidly progressing, and that at present everything is in favour of the work. (Hear, hear.) Our anxiety has been to do our mining work by native labour. We have a peculiar population to deal with, however, and the first duty of the superintendent—at least, one of the first duties of the superintendent—a duty that has been constantly urged upon him by the directors and by our excellent adviser, Mr. Forbes, was the training of native labour. For some time he found many difficulties in the way of this task, and he applied for additional German or European workmen, and in compliance with his request we have during the last half-year sent out an additional number of European workmen. Eight skilled German workmen, in addition to those who were there before, have been sent out by the board during the last six months, but at the same time we have urged upon the superintendent the advisability of these men being used as foremen, than that he should be encouraged in the thought of relying upon a frequent supply of European labour. He tells us in his last letter that he is every day succeeding better than before in training native labour, and, to use his own words, he does not apprehend any difficulty in getting sufficient native labour for the working of the mines under the European superintendence we have sent out. (Hear, hear.) I do not know whether any of you are sufficiently acquainted with the internal condition of the mines to feel interest in hearing particulars as to their working, but, broadly, I may say to you that the Santa Catalina level is now completed, so that Mr. Richardson is now able to stope in several places at once. He says he is working three shifts per day, that he finds in the deep levels soft ground that can be easily taken down with the pick, and therefore he is able to sink the winze from the Yellow Saloon. In other words, he is in a position to report that he is making safe and steady progress. I shall be glad to give you any details that you may ask for, but generally I may say that the work is progressing with reasonable satisfaction, and so far as we are able to judge it is being done safely, and that Mr. Richardson is not simply getting ready a quantity of ore for the first shipment afterwards to find himself unable to satisfy the conditions of the contract, but that he is taking care to keep our permanent obligation before him, and he expresses no doubt as to his ability to satisfy that obligation. (Hear, hear.) Now, I have spoken of the mines because they are first in order to us; to them every other consideration is subsidiary, but of course we are very much interested in the progress of the railway. Just let me say, however, before leaving the subject of our mines that I have the advantage to-day for the first time of the presence of Mr. Forbes here, and I shall be happy to find that from some enquiry in the room I should have to ask Mr. Forbes to say a few words in reference to the mines. Mr. Downes is also here; he has just returned from the mines, and he will be able to answer any questions you may ask. Now, in reference to the railway, you are, of course, aware that this is not our work. The Bolivar Company is under obligation to make the railway, and of course as between them and their contractors we have no concern. At the same time it is of the greatest possible interest to us to know how the railway is progressing, and we are consequently in constant communication with the Bolivar Company on the subject; indeed, you are aware that two of the directors of this company are directors of the Bolivar Company, and thus we have the most direct and constant intercourse between the two companies. And here, while I am upon this subject, allow me to say that nothing could be more cordial or satisfactory than has been the intercourse between the two companies during the last half-year. (Hear, hear.) I believe there has been no attempt to take advantage of the other, and thus far at any rate the prophets of evil have found their prophecies falsified; those who predicted that there was danger of an undue influence being exercised by the one company over the deliberations of the other have lived to see their predictions fall to the ground. (Hear, hear.) Gentlemen, with reference to the condition of the railway, I remember telling you at the last meeting that the directors anticipated that by the end of the month of May—that is to say, by the end of the month which has just terminated—they would have the railway completed to La Luz—that is, to within a very short distance of the mines; indeed it is the point from which the final rise commences to the mines. Now, I too find prophesying a dangerous work, and unfortunately I am not a prophet, at any rate, my prophesy in respect to the completion is not fulfilled. The railway is not completed, and its completion is an event that yet I feel much difficulty in prophesying about, and I should much prefer to hear the opinion of those on whom the responsibility more immediately devolves, and I am glad to say the contractor (Mr. Perry) is here. I am glad to see him in the room, and I should like to hear from him in a little time his opinion as to when the railway will be completed. The contract between the Bolivar Company and their contractors provides for the completion of the work by the month of January next, and I hope that we shall hear from Mr. Perry that he has no doubt of having the contract completed by that time. This, however, I will say, that progress has been steady, and I believe—I speak now as as a Quebrada director, and not as a Bolivar director—that it has known no interruptions except such as were quite beyond the control of the contractors themselves. Of course, they were not responsible for the interruption that arose from the revolution, or for that caused by the extraordinary fall of rain; but, with those exceptions, making due allowance for them, I am unaware of any interruptions to the progress of the work. (Hear, hear.) I have a report here, which I will ask the secretary immediately to read, from the Bolivar Company to this company, in order, I am frank to say, to be read at this meeting, as to the present condition of the works, and it will be unnecessary for me to say more than that this report is collected from the best information received from our representatives in Venezuela, and is confirmed by the information brought to us by Mr. Downes. Now, gentlemen, there is another subject with reference to our work in Venezuela to which I wish to allude. There are many subjects at present occupying the attention of your board, and one is the necessity of making provision at once for the supply of our mining staff. You will readily believe that we find it very expensive work to send out all our provisions from England; and, as the works advance, and the staff increases, that will become increasingly expensive. We endeavoured to make provision as far as possible for the support of our staff from Venezuela We are clearing ground now with a view to this purpose—to the growing, as far as we can, of the produce required for their consumption—and this is a subject to which we attach very much importance, and which is occupying a considerable amount of attention just now. We also have under consideration the question of making a road from the interior to join some part of our line. The exports from Venezuela, from the district of which San Felipe is the centre, are very much larger than I had supposed—very much larger than is generally supposed to be the case. We find that there is a goods traffic—to use that term—of about 10,000 tons per annum between San Felipe and Europe. It has been very strongly represented to us that it would be a very great advantage to the country and to this company that there should be some road between San Felipe and our line. You are aware that this subject has been thought and talked about before; probably you are aware that our good friend, Mr. Hemming, entertained a very strong view that this company ought not to touch that subject at all, and that, if not *ultra vires*, it would be at least indiscreet to do so. Now, Mr. Hemming's views were formed upon the then existing state of things, and, circumstances having altered, I believe he has changed his opinion too. I will ask him to tell you himself why he now adopts this view of the matter; suffice it to say that I entirely agree with him, and I believe that to make a common road from San Felipe to some point of our line will be a very great advantage to this company. It will supply us with an immediate revenue. The road is important, and I believe it can be made very inexpensively. The moment it is made we shall have a large traffic over it, which will prove a source of no inconsiderable immediate revenue—(hear, hear)—and that is a consummation devoutly to be wished for.

Mr. BOWYER asked for some explanation as to the sources of the revenue the company hoped to derive from this road.

The CHAIRMAN replied: The more traffic we have over the railway the larger will be the sources of revenue to our company. I do not think you will find very much difficulty in understanding that. It is a subject upon which we are obtaining information, and to which we are giving all the consideration we possibly can. Now, there is just one other subject to which I must call your attention, and probably this is the last—the financial position of the company; and, perhaps, in regard to that question it is unnecessary to say more than this, that I may now relieve your minds of any anxiety upon this subject, for arrangements are made with a firm—Messrs. Matheson and Co.—by which we are assured, I believe, of a sufficient supply of money to meet our requirements until the railway is opened, and until our proper legitimate income is derived. (Cheers.) And now, gentlemen, having said thus much to you about our condition and arrangements abroad, let me say in reference to our condition at home that I believe—I was going to say every director has attended every meeting during the last half-year, but if that be not absolutely correct, it is so practically. Then we have had the most perfect unanimity and accord at our meetings. Real work has been done; no time has been wasted. We have had no personalties to deal with, and thus we have had no work to discuss but the real work of the company. You will readily understand that in view of the completion of the railway our work is very greatly increasing; the responsibilities of your board are increasing, the amount of time and consideration required from your directors is increasing—and increasing very greatly indeed. Do not be afraid, gentlemen, I do not mention these facts because I am going to ask you for an increased allowance to the directors on this account; we are content to wait for that; but we feel it absolutely necessary that we should be able to secure some greater concentration of time and thought to the interests of the company than can be given in the ordinary condition of things. We did think either of appointing ourselves temporarily, or of recommending to you the appointment of additional directors; but that of itself would not relieve us very much—merely to have nine instead of six directors would not be a very great relief, when what we want is more time, and individuality of time and attention. Well, under those circumstances, it occurred to me that we have power under the Articles to appoint a managing director, and that it would be wise to avail ourselves of that power. I spoke on the subject with Mr. Hemming, the deputy-chairman, and I asked him whether or not, if such should be the desire of the board, he would consent to accept the office of managing director. I found Mr. Hemming ready to do that under the proper regulations, and with the entire concurrence of every member of the board Mr. Hemming was appointed to that office, and I am happy to say that we have daily evidence of the wisdom and expediency of that appointment. I am not aware of anything more to say to you. I shall be happy to answer any questions from any gentleman present. We have here, as I have said before, our consulting engineer, (Mr. Forbes), Mr. Downes, who has just returned from Venezuela, and Mr. Perry, the contractor, and from any and all those sources of information we shall be glad to answer any enquiries you may think fit to make. Gentlemen, I now conclude by moving the adoption of the report; but before sitting down I will call on the secretary to read the report from the Bolivar Company.

The SECRETARY read the report, as follows:—

June 1.—For the information of your shareholders to be assembled in general meeting on Thursday next, the 3rd inst., I am instructed to hand you the latest report from the company's resident engineer, and which I trust will be considered satisfactory. The last letters are to May 3, and report a continuance of fine dry weather, suitable for the prosecution of the works, which since the date of the company's last meeting have made substantial progress. The resident engineer, Mr. C. E. Shepheard, announces that the earthwork is completed to 35 miles, that the bridges, trestle-work, and drains are well advanced to Palma Sola, and that satisfactory temporary arrangements have been made for carrying up material at these spots where the permanent bridges are not completed, the last being probably the most difficult part of the work of the engineering staff in a country where the sole means of transport of material is the railway itself. He also informs us that the difficulty experienced in crossing the swamp at Moja Huevos, which has been the cause of so much delay, has been finally conquered, and that the locomotives are making daily use of the viaduct. It will be in the recollection of your shareholders that the operations of this company were last winter, and during a portion of the present spring, much interfered with by the bad weather and internal disturbances; but these causes having been happily removed, a good and steady supply of native labour has been secured, which, with occasional fluctuations, is likely to continue. I regret to state that some of the staff have suffered severely from fever, contracted in the forest; but it is a matter for congratulation that no European lives have been sacrificed. From a conversation I have this afternoon had with Mr. James Perry, I glean that it is his opinion that, with a fair average season, the railway works should by the month of December next reach La Luz, and be quite completed to the mine by the end of the following March.—T. G. GILLESPIE.

Mr. STOCKDALE (shareholder) begged to second the resolution for the adoption of the report, at the same time he thought the report from the Bolivar Company, just read, scarcely carried out the remarks of the Chairman. The report stated that the railway was expected to be finished by March next, whereas the Chairman had expressed his belief that it would be completed by January. He should like this discrepancy explained. Now, he had had the honour of of attending the meetings of this company since it had been first formed, and this was certainly the most remarkable meeting of all the remarkable meetings that he had attended. (Laughter.) There had been, he understood from the Chairman, perfect unanimity at the board—that was, he thought, a new thing. Then he considered it a very good thing that the directors had attended to their work—he took it that that was a new feature in the history of the company—(laughter). And then the most surprising thing of all was that the board had made an arrangement with Messrs. Matheson by which the company was to have all its wants supplied. (Hear, hear.) In the next place he had heard something about three shifts; in regard to that matter he wished to know the cost and hours of each shift. Now, he deemed the most important question to him and his fellow-shareholders was that of timber. At some meetings some years since most sanguine anticipations had been held out to the proprietors as to the revenue to be derived from the timber on and about the company's property. There had been a shipload once sent over to this country, which had been sold at an enormous profit, though what became of the profit he did not know. (Laughter.) He had understood that if the mine failed the timber would certainly prove a source of profit. What surprised him, perhaps, more than all was that Mr. Hemming had become a member of the board, and had been made its managing director.

Mr. F. H. HEMMING (the deputy Chairman): The duty would under ordinary circumstances have devolved upon me to have seconded the proposition of the Chairman, but my old friend and acquaintance, Mr. Stockdale, having taken that out of my mouth relieves me from the necessity; and after the full explanation you have received from our Chairman I should not have thought it necessary to add a word, but that he expressly alluded to me upon one particular subject, which is now engrossing a very great deal of our attention. I am glad that he has afforded me that opportunity, because in my long connection with this company I have always prided myself upon my consistency, and it would have appeared very odd that I should now be supporting a particular part of the plan of the future operations in diametrical opposition to the opinions which I expressed for so many years, and hence, as our Chairman said, I will give you my reason for doing so. At the time it was first proposed to open the connection between San Felipe and our property I thought that it was very imprudent to think of anything that would divert one shilling from what was necessary to lay out in the development of the mines. In addition to which, in my official connection with the Government, I knew, and tried to persuade the directors at that time, that the Government would never listen to such a proposition, and, therefore, it would be time wasted to make it. At that time the Government contemplated a railway from San Felipe to its own natural port, Puerto Cabello. Circumstances have greatly altered in that country during the last eight or ten years. Their object was frustrated in getting that railway made, and its prospect would now seem to be very remote indeed, so the Government finding that was the case were very anxious, as San Felipe could not get its own railway, that it should profit as far as it possibly could by the railway passing through the Quebrada property. That desire on the part of the Government has relieved me of the difficulty which embarrassed me before, for I then knew that the scheme would be opposed by them. Now I feel sure every encouragement would be given to it. (Hear, hear.) These brief remarks will, I think, sufficiently explain my altered view of the case. Now, as Mr. Stockdale has made some allusion to timber, it is incumbent upon me to state that if the proposed communication between San Felipe and a point on our property were actually carried out I believe that the carriage of timber to San Felipe alone would pay the whole cost of the communication. (Hear, hear.)

A SHAREHOLDER: What is the nature of the country between San Felipe and our mine, because it appears to me from the map to be exceedingly hilly?

Another SHAREHOLDER: Why should the Quebrada Company make the road?

The CHAIRMAN: You know the Bolivar Railway Company cannot make it without the consent of the New Quebrada Company, because for part of the road they must come into a portion of our estate. And, moreover, I may tell you that we have no intention of allowing the Bolivar Company to construct the road without deriving some benefit from it. (Hear, hear.) If the construction of the road will prove remunerative, and I believe that is beyond question, I think we ought to make it, and not allow so favourable an opportunity to pass from our hands.

A SHAREHOLDER: I apprehend if this road were made the merchants of San Felipe would join in the expense, and that the total cost would not exceed 2000*l.* to 3000*l.* It is about 25 miles—(the CHAIRMAN: 27), and the merchants of San Felipe would probably pay about one-half.

Another SHAREHOLDER: How much of these 27 miles lies within the property

of the company?——The CHAIRMAN: Not much, but quite enough to enable us to make our own terms.

Mr. BOWYER assumed that the Bolivar Company would derive the greatest advantage from that road, and if that were so he did not see why the Bolivar Company should not make it. He thought it would be very wrong of this company to take any action in the construction of the proposed communication. They should leave shareholders of the Bolivar Company to spend their money on the work, and pay this company a toll for coming across their land. He trusted that the board would not mix up with their legitimate operations any railway or road scheme, because he felt sure the work would cost more than at present contemplated. Some time ago there had been a question raised as to who should pay to the Venezuelan Government a sum of 5000*l*., and for permission to import goods without duty at Tucacas. That was a question between the two companies, nevertheless the poor Quebrada Company paid all the 5000*l*. Now, he wanted to know if the question was settled, and if so upon what terms?

Mr. J. H. TAYLOR asked if there was any reason to suppose that more money would be required than the 30,000*l*. originally contemplated to be raised by debentures, and if not to what extent had the shareholders come forward by this time, and whether the "eminent firm" mentioned who had undertaken to supply all that the company would require would stand exactly in the same position as the debenture holders?

The CHAIRMAN then rose to reply to the questions asked. He believed it would be more satisfactory to the meeting to hear their questions answered from the best sources—from Mr. Forbes or from Mr. Downes, or from Mr. Perry—than from a merely intermediate channel, but some of the questions asked were peculiarly his own. First, he would deal with the question put by Mr. Bowyer. He must say he should have been glad if instead of making such very strong complaints against their always allowing the Quebrada Company to be put on one side, and the Bolivar Company to be pushed forward and favoured in every instance, he had asked the question if such were the case or no. (Hear, hear.) And if Mr. Bowyer had seen fit to act in such manner the answer he would have received from the board would have been that just those things which ought to have been done in the best interests of this company had been done. (Hear, hear.) He would have learned that there was a contract made between this company and the Bolivar Company, and in consideration of their not making the railway to Punta Brava and stopping at Tucacas (if that should be the ultimate sea terminus of the line), there should be a proportionate reduction in the rate of tariff, and that reduction should be determined by arbitration. (Hear, hear.) Mr. Bowyer, if he had chosen to make enquiries, would have found that instead of there being an overwhelming Bolivar influence in the direction of the New Quebrada Company, taking away all its independence, the preponderating influence, if there were any, was just on the other side. There were two directors of the New Quebrada board—the Chairman and deputy-Chairman—on the board of the Bolivar Company, and one Bolivar director sat on this board. He did not believe in shareholders coming to companies' meetings for the mere purpose of running down the shares, and certainly it was very unfair that such observations as they had heard should have been made until first of all questions had been asked with the view of ascertaining the truth. (Hear, hear.) With reference to the 5000*l*. given to the Venezuelan Government he would state this. A certain arrangement had been made between the Quebrada Company and the Bolivar Company, at a time when the Quebrada board believed that they had certain concessions from the Venezuelan Government, for the free export of ores and for the free import of provisions. Unfortunately for themselves, they had found later that the Government of Venezuela refused to recognise those concessions, but that did not take place until after the contract had been made. The directors of the Quebrada Company had led the Bolivar directors to understand in all good faith and sincerity that they had those concessions. Col. Strange had then been the Chairman of the company—the friend of the gentleman whose question he was now answering—and he, in conjunction with himself, in all sincerity and good faith had led the Bolivar Company to believe that they had those concessions. Subsequently, however, they found that the Venezuelan Government refused to recognise those concessions, and for this reason—that they had been granted to the old Quebrada Company, and they refused to recognise this company as the company to whose benefit those concessions ensued. The board had thought that a very hard determination. They did their utmost to remonstrate with the Government on the subject, and ultimately a gentleman coming from Venezuela had been deputed to meet the directors on this question. Col. Strange and himself had been authorised to meet that gentleman, and discuss the matter on behalf of the company. Well, ultimately it had been agreed that the concessions as originally granted, with some slight variations, should be renewed, subject to the payment of 5000*l*. The board had tried to relieve themselves from the payment of anything, but it was a fatal thing if they could not have got those concessions, and so they at length consented to pay the 5000*l*. But here, again, the hon. proprietor might have obtained a little information if he had chosen to ask for it, which would have rendered his remarks wholly unnecessary. The Quebrada directors had brought this matter before the Bolivar Company, and they had asked them to contribute towards the 5000*l*. To this the Bolivar board had replied that they did not think that any part of that sum should be paid by them, but that at the same time they were willing to allow the question to go to arbitration. (Hear, hear.) Thus this ground of complaint seemed—at least, to him—to be entirely gone. (Hear, hear.) Then the only other ground of complaint was that this company had paid part of Mr. Downes's expenses. Why, he had spent three weeks at the mines, and his visit had been of essential service to this company. Mr. Downes had gone over the whole of the railway, and had reported as to every inch of it. Moreover, he had enjoined on the directors that it was of the utmost importance that they should have every possible convenience at Tucacas. The board had not been disposed to leave it to the Bolivar Company entirely, and they had chosen, he believed deliberately, and in the very best interests of the company, to pay one-half of Mr. Downes' expenses if the Bolivar Company would join in sending him out to approve the change of plans necessary by the change of terminus. And they were perfectly satisfied now after his return that they had acted well and wisely. (Hear, hear.) Now, as to the debentures, he, too, regretted that they had not been entirely taken up by this company. He thought they had offered terms which might have well tempted the shareholders, but still out of the 30,000 only 20,550 had been taken up, and in regard to the remainder they had arranged with Messrs. Matheson that they should take them up if necessary. There was this advantage which he should like to point out to the shareholders from this condition of things. In some respects it was better for the company that the whole of the debentures had not been subscribed for (though the fact of their being all taken up would have gratified him, as showing the confidence felt by the shareholders), because part of the agreement was that they should have the option of converting the debentures into shares within the next three years, but with Messrs. Matheson they had arranged that they should give them notice of their intention to convert the debentures into shares, so as to allow the board time to pay off the loan. (Hear, hear.) With reference to the apparent inconsistency between his remarks and the report of the Bolivar Company, he desired to explain that when he mentioned that the line would be completed by the end of the year, or January next, he referred to its completion so far as La Luz, whereas the report spoke of its completion to the mines themselves. Then, as to the benefit to be derived from the construction of the road, he might mention that he had lately been present at a meeting of the Bolivar Company, and he had there heard a strong complaint made that the New Quebrada Company always obtained the advantage over them. (Laughter.) Now, while he would not admit that, he thought this company had held its own in the arrangements made thus far. (Hear, hear.) Turning again to the question of the road, he observed that the New Quebrada directors were not disposed to allow the whole of the interior of the country to be placed in the hands of the Bolivar Company, and the shareholdors might depend upon it whether they made it or not they would secure some of the benefit accruing from its construction. (Hear, hear.) As to the timber, the directors had no reason to think differently about that source of profit than they did before, but they did think it wise to concentrate their attention upon what they might call the main interests of the company, and without thinking at all differently upon the subject, the prevailing opinion of the board was that they had better leave it for the present, and exclusively devote their attention and energies to the working of the mines. (Hear, hear.) He might add, in regard to the construction of the road, that they wanted the Government to pay some part of its cost; they wanted the merchants of San Felipe to pay some part, and they wanted themselves to pay a very small part. (Hear, hear.)

Mr. FORBES, consulting mining engineer to the company, said: I must, in the first place, premise by stating that I have not myself been in Venezuela since 1857, and never at the Quebrada Mines; I had, therefore, entirely to rely for my information upon the manager there. I am happy to state that the last accounts we have received from him are extremely encouraging. I must admit that for some time I was very much discouraged by his reports, because he evidently found so much difficulty in employing native labour, and he was continually impressing upon me the necessity of sending out Germans from Europe to carry on the works. I invariably opposed that. My rule is that in whatever country you may be engaged in carrying out construction works you should endeavour to employ the labour of that country. In fact I even went so far as to tell Mr. Richardson that we had better shut up than be dependent upon labour from Europe, and I am glad to say that he now expresses himself much more confidently than before, and that he is beginning to get a staff of men together properly trained and organised. In fact Mr. Richardson now believes that with the assistance of some men we have just sent out, principally smiths and timbermen, that he will be able to carry out the works. (Hear, hear.) That is a great point, and one of the greatest possible importance to the future of the mine. He also seems to have not the slightest difficulty in raising the quantity, or more than the quantity, of ore necessary to fulfil the contract with the Bolivar Company. At the same time I have impressed upon him that we should not be satisfied with the minimum quantity of ore raised from the mines, and from the reports that he has forwarded to us of the capabilities of the Aroa lode, we have every reason to expect considerably more than the quantity that we have contracted to deliver. I may add that I have stopped him from diverting any of the small force we have employed to the development of other parts of the mines. There is no doubt that Titiara is considerably richer, but the lode is not of the same magnitude as the Aroa, and although we might gain in quality, we should certainly not gain in quantity: and as long as it is a question of training up native labour, and getting a staff together, I think it is better that he should concentrate his operations upon the Aroa lode. (Hear, hear.) In regard to the question put about the shifts, there was a slight misunderstanding. I insisted upon all work being done by piecework, and provided him with forms, but he seems to have had very great difficulty at first. I also wished, in view of the heat of the climate, to reduce the number of hours during which the workmen laboured, and to arrange 8-hour shifts in lieu of the long 12 hour shifts. After considerable difficulty he brought the men, with few exceptions, to accept the shorter shifts. The whole of the work, with the exception of the timber men, is now on piecework, and, although the shifts are eight hours, they are not paid by day work, but for eight hours work at the mine. The cost of the labour I find very heavy, being from 8 to 10 rails per day, but I believe when the construction of the line is completed, and there is no competition in that quarter, we shall be able to get a great deal more labour, and at a considerably lower rate. (Hear, hear.) Indeed, the accounts of the last few months have been very much more satisfactory than previously. Of course, allowance must be made for such adverse influences as the occurrence of the revolution, when almost all the men ran away for fear of compulsory enlistment.

Mr. FORBES, in answer to questions, said the employment of English workmen did not answer in countries where drink was cheap, for they mostly drank too much and became overbearing. The grade of the ores was from as low as 6 to 47. Mr. Richardson considered he would have no difficulty in getting a minimum of 20,000 tons of ore above 20 per cent. The object in his (the speaker's) mind was to bring the grade as low as possible, because they had an immense quantity of poor ore that if it were not amalgamated would be lost, and thus it would be wiser to make up their obligation in quantity rather than in quality. (Hear, hear.) Mr. Richardson was trying to make an average of 20 per cent.

Mr. CAMPBELL DOWNES, C.E.: Gentlemen, being deputed by the Chairman to give you some information as to the Palma Sola and San Felipe road, in answer to the enquiries made, I may mention that I have been lately over it as far as Chino, and have known it for the last 10 years. From Chino to San Felipe is about 10 miles, for about 8 miles of that is the present high road from San Felipe to Puerto Cabello, and from Palma Sola to a point at which the track leaves the company's property the road cannot be considered hilly, except for a very short distance—that is to say, for about 2 to 2½ miles; the rest is dead level, and there are only two swampy places which may cause any difficulty. Then, with the exception of the River Aroa, which is a large river, there are only two rivers of any consideration to cross, though there are a large number of smaller ones—about 12 or 14—requiring 20 to 30 ft. spans. After reaching the eighth mile from the company's property the road would pass through a cultivated district with villages, the whole way to San Felipe, therefore it is not by any means a difficult road to construct. The distance is about 27 miles in all, so far as we can tell, but without a proper survey it is impossible to give you the exact distances or elevations. I went over it twice for the purpose of ascertaining all particulars. As to the cost, without survey or sections it would be difficult to give a definite estimate, but I should say that for 200*l*. or 300*l*. a mile a very good road could be made, passable at all periods of the year. Then, with regard to its value, it is specially valuable now; first, because the railway which was intended from Puerto Cabello to San Felipe is not likely to be constructed, and hence all the produce of the country will have to come over this proposed route. Added to that, since the revolution the ports of Coro and Maracaibo had been closed, therefore the whole of the produce shipped from those places will have to come over this line. It is estimated that during the dry season of the year upwards of 10,000 tons of produce are transported along this road by means of donkeys and mules. The nature of the produce is coffee and cacao principally. The present road, which I have been over, is passable during the dry season only, and I suppose it would be fair to reckon that about five out of twelve months would be the dry season, and that seven are very rainy. During a portion of those seven months the road is very often wholly impassable, and the produce has to go round by another road, which entails some 60 or 70 additional miles of carriage. Therefore, it would be of the very greatest possible advantage to the country if they could get a good road to travel over. As regards the railway, when I passed over it the first time, the engine was running to about the 15th or 16th mile. I may add that an earnestness of purpose characterised all those who were out there engaged on the works, and I noticed with pleasure that every endeavour was being made to conquer all the difficulties in the way of the work. In regard to the dangerous viaduct that has been referred to I may tell you that there was a viaduct at the 15th mile of the line. Now, it is the habit on all railway construction to get on with the leading of the permanent way materials—that is to say, to get forward with the rails and bridge work. For this purpose it is necessary when you come to any swampy ground to put over some temporary work to carry the engine or trucks across. Owing to certain circumstances the viaduct at the spot in question was not commenced until just at the beginning of the last rainy season. The consequence was that it was perfectly impossible to construct any of the permanent work, and therefore a temporary work had to be executed for the purpose just described. Thus you will see it could not be called a dangerous viaduct, because it was simply temporary. When I left the country the earthworks were completed to about the 33d or 34th mile, with the exception of two miles in the centre. I think I may say that there were men working throughout the length and breadth of the 54 or 56 miles of the line in some way or other, and, in fact, every endeavour was being made to construct the line with all possible dispatch consistent with good execution. (Hear, hear.)

Mr. PERRY (the contractor) said as to when the railway would be completed was not a matter of money, or of superintendence, it was simply a matter of climate that they had to deal with—a matter against which they could not contend. If they had a fair season, no epidemic, no revolution, and if the autumn and winter seasons were reasonably fair, there was no reason why the line should not be constructed up to La Luz by the end of the year, and up to the mines by March next. (Hear, hear.) It was not 12 months since their (the contractor's) agents landed in Venezuela, and from the time of their landing for many months it had rained incessantly. They had also had to contend against the adverse influence of four month's revolution, which had drawn away the workmen to such an extent that at times they had had no more than 50 men at work, yet notwithstanding all that he was prepared to say that at the present moment they had done two-thirds of their work. (Cheers.) They had now between 600 to 700 men engaged on the line; in fact, as many men as they could profitably employ, and there was no reason to doubt that the work would be completed within the time specified. (Hear, hear.)

The resolution for the adoption of the report was put and carried unanimously.

The CHAIRMAN observed that treating this as the commencement of a year, which properly it was not, for it was the half-yearly meeting, he firmly believed that they, the proprietors, had entered upon the last non-dividend year of the New Quebrada Company. (Cheers.)

Mr. SKINNER had pleasure in moving a cordial vote of thanks to the Chairman and directors. This, on being seconded by Mr. LEWIN, was put and carried unanimously.——The CHAIRMAN briefly responded, and the proceedings closed.

'For remainder of Meetings see to-day's Journal.]

FOREIGN MINING AND METALLURGY.

Some deliveries of coal made recently, or contracted recently to be made, to the Belgian State lines constitute just now nearly the only important transactions of the Belgian collieries. These deliveries or contracts are advantageous in this sense that they only bind the parties concerned for comparatively short periods. There have been few variations in quotations, which are not likely to experience any important change until a vigorous revival takes place in metallurgical industry. Labour does not experience any reduction, and the advance in wages seems an established fact. Improved mechanical appliances have, however, a tendency to diminish the number of workmen employed, and by consequence to reduce the cost of production. Belgian coalowners must endeavour to attain this latter object, since English and German coal now sustains rather a formidable competition with Belgian combustible. At present English coal is daily penetrating to the centre of Belgium. An important decision has just been given by the first chamber of the Brussels Court of Appeal. The decision, which is in favour of the Reunion Company, and adverse to the East Belgian Railway Company, is to the effect that a railway company is liable to a claim for compensation to industrial establishments for which it finds itself unable to conduct traffic, in consequence of the inadequacy of its rolling stock.

A few months ago a society of ironmasters was formed in Berlin for the purpose of procuring the re-establishment of the import duties on iron in Germany. The society hopes to convince the Government that the extinction of these duties, which, as at present arranged, are to cease in 1877, is ruining the iron trade of Germany. Referring to these efforts, the British Consul at Dusseldorf, in a communication to the British Foreign Office, declares that the iron trade is not suffering more in Germany than in Scotland or Yorkshire, and gives it as his belief that the Government will not allow itself to be influenced by this agitation. Germany requires not protection, but freedom of trade for the expansion of her manufacturing power; and the only special evil from which the German iron industry is suffering arises out of the manner in which the railway companies are fettered by the Government. When trade was prosperous the companies could not share adequately in the overflowing wealth, because they could not raise their rates for carriage without the consent of the Government, and when after some delay this was obtained the days of prosperity were gone, and the enhanced charges are now being borne by the trade just when its depression renders it least able to bear it. As an illustration of the extent of the bad trade in the iron and coal industries in Germany, the Consul gives the prices of the shares of several companies at the close of 1874, in contrast with those of a year previously. The following are some of them:—

	1873.		1874.
Cologne Ironworks.....Thalers	180	..... Thalers	137
Bochum Ironworks	146	.....	95
Humboldt Ironworks	110	.....	67
Dortmund Union	85	.....	29
Hochdahl Ironworks	56	.....	52
Styrium Ironworks	158	.....	91
Bonifacias Colliery	131½	.....	82
König Wilhelm Colliery	90	.....	41
Hibernia Shamrock Ironworks.....	106	.....	82

The Cologne Machine Works appears, on the other hand, to be in an improved position, its shares, which in 1873 were quoted at 144 thalers, being now at 168 thalers. The average price of coal at the pit's mouth in the Rhenish provinces was 10s. 8d. per ton in 1872, 14s. in 1873, and 10s. 6d. in 1874. Meanwhile the cost of production had increased 40 per cent. between 1872 and 1874.

At Paris transactions in copper have been effected with some little difficulty. Chilian in bars, delivered at Havre, has made 86*l*.; ditto ordinary descriptions, 85*l*.; ditto in ingots, 90*l*.; English tough cake, 88*l*.; and pure Corocoro minerals, 86*l*. per ton. Chilian, first marks, has made 86*l*. to 87*l*. per ton; current marks, 85*l*. 10s. to 86*l*.; and Lota and Urmeneta, 85*l*. per ton. Copper has been pretty well supported at Marseilles. The German copper markets have been inactive, and prices have experienced no variation. Tin has ruled quiet at Rotterdam; Banca has been quoted at 50½ fls., and Billiton at 48 fls.; it may be observed that there has been rather an animated demand for Billiton. Tin has been rather feeble at Paris; Banca, delivered at Havre or Paris, has made 93*l*. 12s.; Straits ditto, 88*l*.; and English, delivered at Havre or Rouen, 95*l*. per ton. At Marseilles the article has been sustained tolerably easily at previous rates. Lead has been in rather less demand at Paris; French and Spanish have been quoted at 22*l*. 16s., and Belgian and German at 23*l*. per ton. Upon the German markets lead has remained without variation. Zincs have slightly advanced at Paris, but the consumption scarcely justifies the rise. Silesian zinc, delivered at Havre, has brought 25*l*. 4s. per ton; and other good marks, 24*l*. 16s. per ton. Vieille-Montagne zinc in sheets has brought 30*l*. per ton at Marseilles. The German zinc markets have ruled firm.

The coal trade rules very quiet in France, transactions being confined to the immediate requirements of consumption. The fall in prices, which has been noted for some time past, begins to be strengthened rather than otherwise. Coalowners have endeavoured to contend against the downward tendency in prices; they have maintained nominal quotations, and reduced the extraction, but they have not been able to overcome the tenacity of large consumers, who have succeeded in securing a reduction of 10d. to 1s. 8d. per ton. Small buyers have probably not been equally fortunate. In the Nord sales have proceeded slowly, and prices have experienced very few variations. There is a tendency to replace Belgian coal, and especially Charleroi coal, by good qualities from the Pas-de-Calais. It appears from a communication made by M. Vuillemin to the Mineral Industry Society that the average price of a ton of coal in France in 1871 was 12s. 5d.; in 1872, 1*l*. 3s. 3d.; and in 1874, 15s. 2d. per ton, while the wages of working miners have risen on an average 50 per cent. The diminution in the work done for the amount of money previously paid for labour exercised, however, last year only a slight influence on the cost price of each ton of coal produced. The death is announced of M. Courtin, secretary-general of the Anzin Company. The imports of coal into France in the first four months of this year amounted to 2,087,000 tons; coal was exported from France to the extent of 244,550 tons in the same period.

Orders for rails begin to make default in Belgium. Orders for railway plant also show a great want of animation in the same country; a contract is, however, about to be let for 400 coal trucks of 10 tons each, and 100 closed trucks of 10 tons each, for the Belgian State Railways. The establishments producing plates and tyres are pretty well off for orders; the future presents itself rather gloomily, but there is some anticipation, nevertheless, of a revival in affairs before the close of the year. M. Sadoine, the energetic director of the John Cockerill Company, has made a journey to the East, in order to open out upon another continent fresh outlets for Belgian metallurgical industry. One of the members of another Belgian firm proposes to make a voyage to South America with a similar object. Rails are quoted in Belgium at 7*l*. to 7*l*. 8s. per ton; merchants' iron has made almost a similar price, and plates have ranged from 10*l*. 16s. to 18*l*. 8s. per ton. The Minister of Public Works has announced that it is the intention of the Belgian Government to appoint a commission to consider the question of mineral concessions; the commission has not yet, however, been formed. The North of Charleroi Collieries Company has announced a second dividend for 1874, at the rate of 2*l*. per share.

There has been no material improvement to report in the condition of the French iron trade. The amount of business passing is comparatively limited, and almost all that the works can do is to maintain a resemblance of activity. Upon the Paris market iron quotations can be said to have experienced scarcely any change. The Administration of the French Navy has let contracts for certain *matériel* required for the French naval service. The Terre-Noire Company obtained a contract for 880 tons of steel plates, at 20*l*. 16s. per ton. The Châtellon and Commentry Company obtained an order for 190 tons of double T steel bars, at 31*l*. 16s. per ton. The Creusot Company obtained an order for 20 tons of T steel bars, at 27*l*. 15s. 3d. per ton. These figures show some reduction as compared with the corresponding figures current last year. In the Longwy basin No. 3 ordinary pig is quoted at 3*l*. 18s. per ton for small quantities, and 3*l*. 16s. per ton for large lots; No. 1 pig is worth 4*l*. 8s. per ton. In the St. Dizier district affairs have been moving on of late passably well. The death is announced of M. Koechlin, an eminent locomotive builder of Alsace; M. Couche, engineer-in-chief of bridges and roads, and director of works on the Northern of France Railway, is also dead. The imports of pig, &c., into France in the first four months of this year presented a decrease of 19,871 tons, as compared with the corresponding period of 1874. The imports of iron and plates present a diminution of 5551 tons, while those of minerals show a reduction of 81,769 tons. The exports of iron, pig, and steel from France in the first four months of the year present a reduction of 11,130 tons, as compared with the corresponding period of 1874; those of minerals also show a falling off of 24,726 tons.

THE KISTNA COAL FIELD.—The report of Mr. T. Vanstavern, executive engineer, D.P.W., upon the exploration of Col. Applegath's supposed coal field in the Kistna district, leaves little doubt that there is an entire absence of coal over the whole area which was believed to contain that mineral. The bore-holes have all been put down until the metamorphic rocks were reached, and no coal nor any combustible substance was met with in any of them. In addition to this Mr. Vanstavern closely examined the ground over an area of 58 square miles, and searched carefully for fossils without success. He remarks that no coal-bearing rocks nor outcrops of coal or any combustible matter was met with," and expresses his opinion that "by the nature of rocks there certainly cannot be any coal," and in this view all geologists will probably agree with him. Col. G. W. Walker, R.E., secretary to Government, expresses his regret that he has to concur with Mr. Vanstavern's views, but the explorations have been so complete that he feels sure that if coal existed at all in the place some signs of it must have been discovered. The borings have been made as close as possible to the pits dug by Col. Applegath, and in every instance have been sunk below the bottom of the pits; in addition to this Mr. Vanstavern, at Col. Walker's request, cleared out the horizontal shaft in which it was understood Col. Applegath found something resembling coal, which he was able to burn, but nothing was met with except shale. It appears that Col. Applegath was misled by a black clay shale with graphite and dark-brown clay, which might be supposed to have been taken from the immediate neighbourhood of coal. It seems that this view was at first entertained by Col. Walker and Mr. Vanstavern, but systematic exploration has entirely dispelled the illusion, and left no hope of finding coal in the Kistna district. Col. Applegath may congratulate himself that the entire subject has been thoroughly investigated and settled, and that although it has been proved that no coal exists, the similarity of the shales met with to those found near coal relieves him from any reproach for having anticipated the existence of coal.

EXPLORATION OF QUEENSLAND.—The narrative of exploration of the north-east coast of Queensland by the Queensland Government North-East Coast Expedition, 1873, is a particularly interesting document, but the exploration was, of course, not sufficiently complete to permit of much notice being taken of the mineral resources. The low country drained by the Tully, Murray, Macalister, and Hull contains much valuable agricultural land, and extends back to the high ranges, which are a continuation of the Main Coast Range of Eastern Australia. These mountains are granitic, with occasional interlinds of gneiss, quartz, and micaceous schists. The western slopes, which are drained into the valley of the Upper Herbert from the falls of the Herbert for some 60 miles upwards, are occasionally approached closely by eastern tongues of Leichhardt's great basaltic table land. The sand and gravel on the bed of Johnstone river are disintegrated granite, with abundance of small waterworn quartz pebbles and mica, but on trial with the tin dish did not give the colour. No white man has ever yet penetrated the mountain region to the rear of Trinity Harbour, a lofty watershed region, containing next to Mount Kosciusco, and possibly some of his fellows of the southern Alps, the highest mountains in Australia, which shed their drainage into the Pacific and the Gulf of Carpentaria—a complete renversement of the watershed system of Southern Australia, with a geological formation strongly indicative of auriferous deposits on its coast margin, and abutting northerly upon the very rich alluvial diggings and auriferous slates of the Palmer river. Should such auriferous deposits be developed to the rear of Trinity Harbour very little engineering difficulty will be encountered in forming the necessary wharves on deep water, and from the appearances of the ranges no difficulty is anticipated in obtaining a passable road over them to the interior.

SEDIMENT IN STEAM-BOILERS.—Mr. G. NIMMO, of Glasgow, has patented an improved mode of preventing the deposition of sediment and incrustation in steam-boilers. This invention consists in placing within the water in the boilers, bags, pads, or "sweeps," made of cotton waste, hemp, rope, or other soft material (or pieces of wood covered with a soft material), which, when saturated, possess a specific gravity rather heavier than the water; so that these, by the ebullition or boiling of the water, and by their own shape or configuration, rise and fall in and agitate the water, so as to keep the sediment in motion, and prevent it from settling or depositing in the boiler, and so prevent incrustation. Within the boiler is to be cooled down, the sediment is blown or drawn off through a pipe and cock for that purpose. When used for either single or double flued Cornish boilers, or multiple tubular boilers, the bags, pads, or "sweeps," are made sufficiently thin to pass between the flues and the shell, or between the tubes themselves, so as to brush and clean them.

EPPS'S COCOA—GRATEFUL AND COMFORTING.—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—*Civil Service Gazette.*

BOILER AND TUBE-TESTING PUMPS.

Fig. 1.

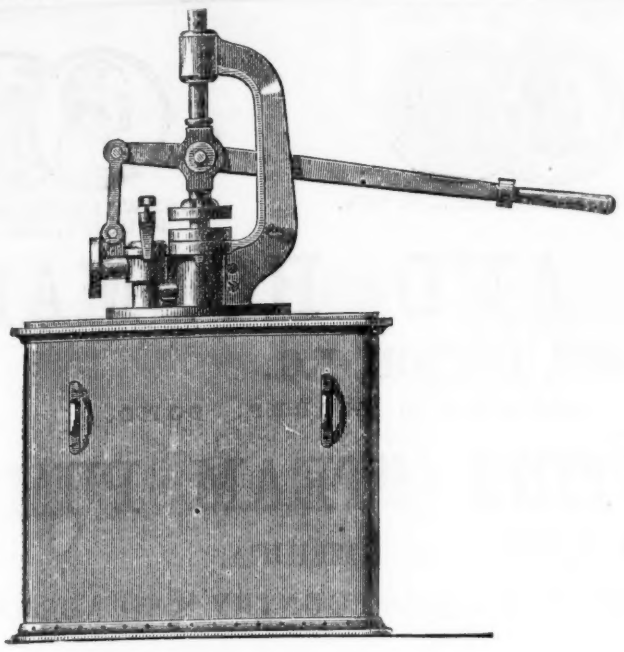
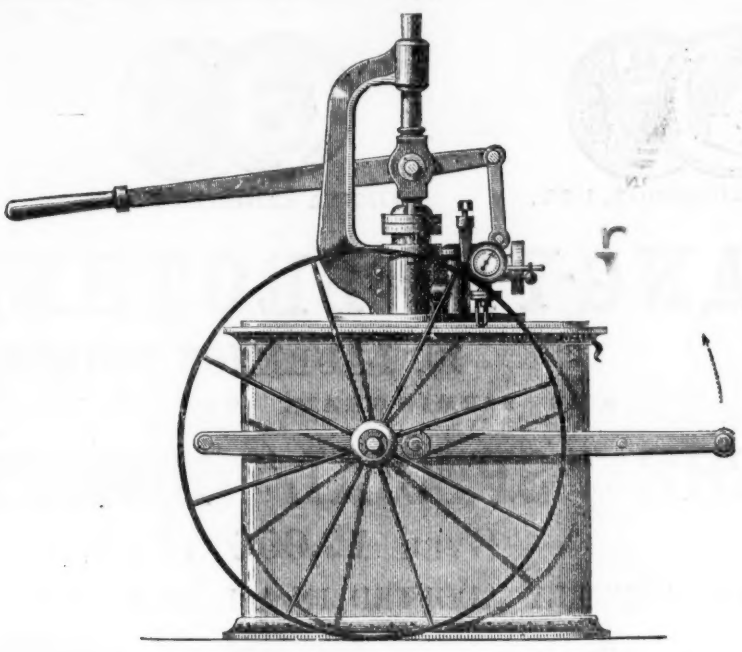


Fig. 2.



BOILER AND TUBE-TESTING PUMPS.

The pumps represented in the annexed woodcuts, 1 and 2, are constructed for testing boilers or tubes by hydraulic pressure. These pumps draw their water for forcing purposes from a cistern upon which they are securely fastened, and their construction may be thus briefly described. The end of the working handle is attached to a swinging link, which is in its turn loosely fixed at its other extremity to the body of the pump, just above the outlet. By this arrangement the plunger piston may be directly attached to the working lever, without using intervening links for ensuring a straight piston action, since the fulcrum of the former becomes a movable point. To steady the action of the piston a stay rib is carried up from the body of the pump casting, which receives the upper part of the piston, allowing the latter to rise and fall according as the working lever is worked. The proper pump barrel is, of course, closed at its bottom end, and in direct communication with the pump valves and outlet. Two valves are used, placed one above the other, and so arranged that when one is open the other is shut, the lower valve passage is lengthened downwards, and communicates with the bottom of the cistern, while the outlet passage is fitted at right angles to the upper valve passage. An access-valve is applied to the top of the valve-passage, which is held down by means of a screw playing on its upper surface. Inside the pump barrel a second pump barrel of 2½ inch outside diameter is placed, which rests on the former by a circular flange, leather being used for packing purposes.

The lower end of the plunger-piston has a flange corresponding to the before-mentioned circular flange of the inner pump-barrel, which may either be screwed to or left independent of the latter. The lower end of this piston is further made to receive and hold the plunger, which has an outside diameter of 1 in. The length of this plunger is made to correspond with that of the inner barrel when the working lever is at the end of its bottom stroke. The pump-piston being attached to the working lever, the action of the pump becomes at once obvious. The stroke of the pump-piston is about 4 in

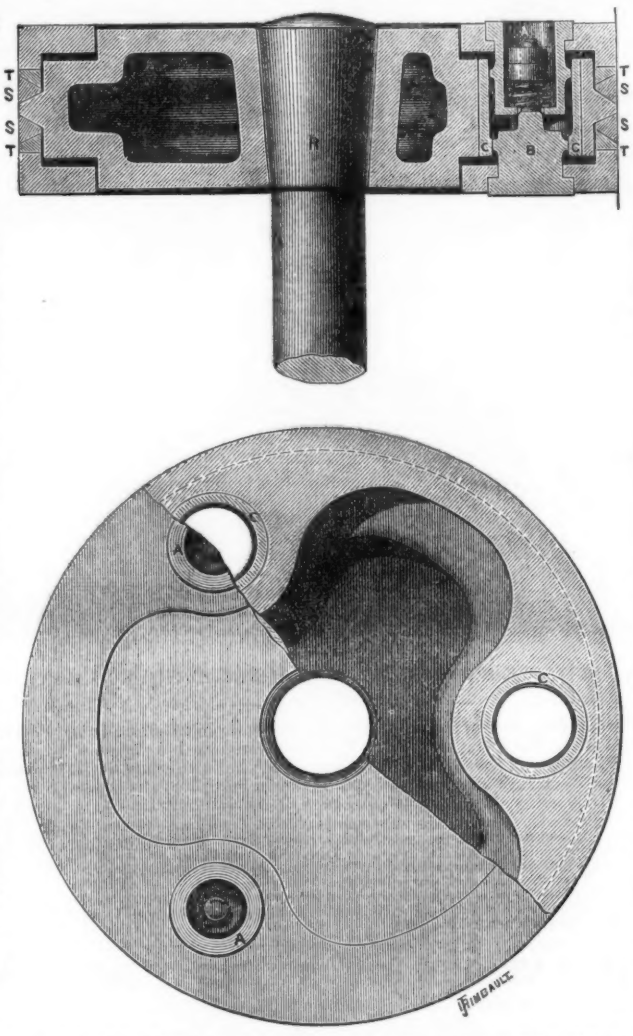
The body of the pump is of cast-iron, and the cistern is made of wrought-iron, 2 ft. by 2 ft. by 1 ft. 6 in., with ordinary manometer working up to 20 atmospheres, and safety-valve. The pump itself will work up to a pressure of 50 atmospheres, and when strained to this pressure, or above 20 atmospheres, hydraulic manometers must be used. For filling the pump the two before-mentioned circular flanges are screwed together, as shown in Fig. 2, but for forcing purposes the lower flange is fastened down to the pump casting, as represented in our first woodcut, which likewise shows this pump for stationary purposes. On the other hand our second figure gives the pump adapted for wheeling about, in such a manner that the cistern usually rests on the ground, and becomes only suspended when the wheels come into play. This is effected, as the figure clearly shows, by suspending the cistern upon a different centre to that of the wheels.

IMPROVED STEAM-TIGHT PISTONS, FOR STEAM AND OTHER ENGINES.

The great importance of securing a steam-tight piston, with the least friction in the cylinder, is a matter worthy of the consideration of all engineers and users of steam power. It is a well-known fact that a large percentage of the power of the steam-engine is lost in piston friction; it is not necessary, however, to enter into the disputed question of the exact quantity of power that is absorbed by piston and packings; suffice it to say that whether it is four-fifths of the whole of the friction of the engine, more or less, there is great necessity to economise this enormous waste, which means a direct loss in fuel. To reduce this friction the above piston has been designed, which has resulted in economy of fuel, saving of tallow, a reduction in the working expenses, materials, &c., and the walls of the cylinder maintain a true and even surface. The friction depends chiefly on the packing used to produce a steam-tight piston, the amount of wearing surface or depth of the packing rings, and the system employed to carry on a continued lubrication to the sides of the cylinder. The defects in the present system of packing pistons are many, often constructed or packed to stand a higher pressure than they are intended to work with, thereby increasing the amount of wear and tear of cylinder and piston.

The greatest friction occurs more especially when first packed, and is the same whether loaded heavy or light; the nature of the operation—screwing down the junk ring on the packing, no matter of what material the packing may be, rope, hemp, rubber, self-lubricating mineral packing, elastic or other patent material requiring little lubrication—it is uncertain and mere guess work whether compressed or not. Often it is screwed down to such an extent that the whole force of the steam has to be thrown against the piston to move it, which is a dangerous operation at all times. In pistons provided with springs the same defect is observable—an undue amount of friction to start with, which is constantly decreasing until the superheated steam has destroyed their elasticity, and the pistons become useless.

Pistons packed with steel rings (or a substance called steel, but which will not harden and bends like soft wrought-iron) are found to wear badly in some engines; they are of necessity made of a mild material, and they quickly wear through; there is also a difficulty to adjust them that they may wear equally, and moreover they are more expensive, and two cast-iron surfaces will work better together. To obviate the existing defects in the present pistons, it is necessary that the piston should accommodate itself to the varying pressures of the steam at all parts of the stroke, and this is said to be effected in Messrs. QUICK and SAMPSON'S piston, which has not only the above essential advantage, but wherever tried has proved thoroughly efficient, without incessantly—as is the practice with the ordinary piston—dosing it with tallow, which clogs the piston rings and packing, tends to start the joints, and is a fruitful source of wear and tear in the cylinder. The slight liquefaction or condensation which always takes place on the walls of the cylinder has proved to be a sufficient lubricant, without the aid of the many patent lubricators for greasing the steam before entering the cylinder, which of late have been acquiring some popularity, and in many cases no doubt tend to steam economy. The saving of tallow alone in a 70-in. cylinder Cornish engine is claimed to be about 30*l.* per annum, which is worth consideration in large mines, and in such colossal establishments as the London water companies works, where the single-acting engine is universally adopted.



The body of the piston is formed with a number of holes or passages, C, in which are fitted small pistons working therein, and accurately fitted with spring rings. These small pistons are connected to the junk ring by means of stems and nuts. S is the packing ring, cut and tongued, whose edges are bevelled, and T is an intermediate ring having only its lower edge bevelled. The bevelled surfaces of the rings S and T, and the lower part of the packing recess, are ground so as to fit each other accurately. Any excess of pressure on the upper side of the piston has the effect of causing the junk ring J to press against the intermediate ring T, thereby forcing the packing ring S against the inner surface of the cylinder by compressing it between the bevelled surfaces of the body of the piston and intermediate ring T.

These steam packed pistons have now been in use about seven years, requiring no repairs, and are opened for examination but twice during the year, the working parts being simply cleaned and put in their places again, and they work on for another six months night and day without stopping, giving no trouble whatever; this is a desideratum, especially in our heavily-watered mines, where continuous stoppages on Sundays to pack the piston is often a serious consequence. The cleaning of pistons packed in the ordinary manner, and continually dosed with tallow—often the most impure, containing acids which cut and eat away the valve-faces and steam apertures—mostly means removing the gelatinous or gluey matter which has congealed and choked up the piston rings, cylinder, and steam passages, with a spade and bucket; but the cleaning of steam-packed pistons is a work occupying but very little time, as no lubricant has been used.

Pistons on this principle, varying from 50 in. to 112 in. in diameter, are working satisfactorily in many of the London waterworks night and day, where the greatest regularity, steadiness, and economy of fuel must be observed; and the length of time they have been in successful work under the scrutiny of such eminent hydraulic engineers is sufficient proof of their efficiency. An opportunity of witnessing the performance of a 112-in. cylinder engine is afforded at the Southwark and Vauxhall Water Company's Works, Battersea, where it is working steadily, quietly, and economically—the reverse of much that may be seen in many Cornish mines.

The pistons are self-packing, and there is a reduction in friction during the down stroke equal to 1 lb. per square inch, and in the up stroke the piston is so relieved that it has resulted in 10 ft. increased height of water raised; they are not liable to get out of order, there is no complication or adjustment by screws and springs, &c.; and, requiring no tallow, there is not the least trouble with clogging up, nor leakage from wear, &c.

All parts are easily got at, and any ordinary engine-driver can take it to pieces, and put it together again.

The advantages claimed by the patentees are—economy of fuel, and increased power; requiring no packing or attention of any kind; economy in working expenses; less cost, when its efficiency is taken into consideration; better vacuum; and friction decreased to a minimum.

AMERICAN PUMPS.

The ingenuity displayed by the Americans in the construction of labour-saving machinery, especially of the class connected with domestic economy and with the minor branches of industry, has long been recognised, and the article in the Supplement to the *Mining Journal* of May 22 has attracted renewed attention to two exceedingly useful inventions, which have had the advantage of long practical trial, having been described in the Journal when first brought forward at the International Exhibition in 1862, and constantly in use both in America and Europe ever since. Hansbrow's California Pump quickly became a great favourite, not only for domestic uses, to which the small size pump is well adapted, but for mining purposes its utility for keeping a winze dry, and, in fact, wherever a simple and substantial hand-pump capable of lifting a good body of water with the minimum of labour being at once acknowledged by practical men. It can now be procured to order, not being protected by patent, of any respectable hydraulic engineer. The cost of a 3-in. pump with 5-in. stroke, which with 35 double strokes per minute will raise about 450 gallons an hour, is about 5*l.*; a 4-in., same stroke and speed, raising over 800 gallons, and costing about 7*l.*; whilst a 5-in., same stroke and speed, will raise 1300 gallons, and cost 9*l.* Any manufacturer inclined to give his attention to their regular maufacture could supply them at 20 per cent. below these prices, and still secure a good profit, as the Germans can deliver them f.o.b. at Hamburg at those rates, and realise a very large profit.

The submerged pump, which has much less to recommend it, has been almost as long before the public, but has of late years been going rather out of use in America. When this form of pump is worked as a suction-pump it is inferior to most other pumps, and by no means cheap. A submerged pump of 3½ in. cylinder and 1 in. tube will raise 9½ gallons per minute by hand, and twice that quantity by power, the cost being from 3*l.* to 3*l.* 10s., according as it is in plain iron or galvanised; 4 in., 5 in., and 6 in. pumps of the same construction in plain iron will cost about 5*l.*, 7*l.*, and 12*l.* respectively, and will lift 13, 25, 45 gallons of water per minute by hand, and from twice to thrice that quantity by power. The principal recommendation of the pump is that the water in the ascension tube, which serves also as the working-rod, falls out when the pump stops working, so that none remains to burst the pipe by freezing in cold weather; but the large quantity of power required to work the pump is generally considered objectionable.

IMPROVED ARRASTRA.—According to the invention of Mr. D. TRUMBULL, jun., of Coulterville, California, a wooden or metal pan, similar to an ordinary grinding pan, is used, on the bottom and sides of which is placed a layer of stones, so as to provide a solid stone grinding surface. This makes a solid stone muller which can be operated the same as the ordinary iron muller. The vertical driving shaft steps at its lower end in the upper end of the standard. A collar fits around the lower end of the shaft, resting upon the top of the standard, and is held in place by chains, which connect it with the upper end of the standard. The lower half of the driving shaft is provided with screw threads, and a key seat cut on one side. A nut, which has an arm depending from opposite sides, moves on this threaded portion of the shaft, and can be fixed at any point desired by means of a key which fits in the key seat. The arms of the nut extend downward a short distance, and are then bent outward, so that their extremities will strike two of the opposite standards, where the nut has been fixed near the lower end of the screw or driving shaft, and thus drive the muller when the shaft is rotated. The object of thus constructing the shaft and driving mechanism is to permit the muller to be removed. The inventor of this machine is, of course, aware that loose stones have been used to form a grinding muller in combination with a lower stone grinding surface, and he claims only the pan with its stone bottom and sides in combination with a skeleton muller, having stones bolted firmly thereto, and also the peculiar arrangement of the upright driving shaft.

MILLING MACHINES.—Messrs. KILBURN and GOODER propose to employ a friction-box or clutch-box driving pulley instead of ordinary fast and loose pulleys, and mount the clutch-box or friction-box fork upon one end or arm of a bell-crank lever, and by means of a lever worked by the ordinary "knocking off board," acting upon the other end of the said bell-crank lever, the machine is rendered self-acting, both in stopping and starting.

SEPARATING METALS.—Mr. F. H. DAHNE, of Swansea, engineer, has patented some improvements in separating tin and zinc from iron and other impurities, and also in separating from silver and lead the zinc which has been employed in desilverising the lead. This invention mainly relates to separating zinc, tin, and other metals which have been used for galvanising and such like purposes by using as prescribed the muffle as ordinarily employed, with a charge or bed of coal, coke, or charcoal, or other suitable material, which the inventor terms a filter. In this muffle so charged a small opening is left in the lower part.

NEW CHAIRS FOR RAILWAYS.—Mr. E. J. GRICE, of Newport (for R. S. Kirkpatrick, of Brussels) has patented some improvements in chairs for supporting the rails of railways. This invention consists principally in adjusting the bearing areas of the chair on either side the rail to the load, weight, or pressure they respectively bear during use. The base of the chair has a wedge or tapering form in plan the breadth of the chair at that end which in use is situated between the rails being double that of the end situated on the outer side of the rail. The same distribution of the iron is adopted in the bearing surfaces of the chair. The seat of the chair is slightly curved at and near its edges, so that as the rail undulates under the weight of a passing load it is not brought against a sharp edge, and there is consequently no cutting action of the edge of the seat on the rail, as occurs with ordinary chairs. A notch is made in the top inner edge of the chair, into which a nail is driven, which takes into the wood key, and the latter is prevented from working out between the chair and rail.

PARIS EXHIBITION, 1867.

VIENNA EXHIBITION, 1873.

LONDON EXHIBITION, 1874.

CORNWALL POLYTECHNIC SOCIETY, 1867 and 1873.

TANGYE BROTHERS AND HOLMAN,

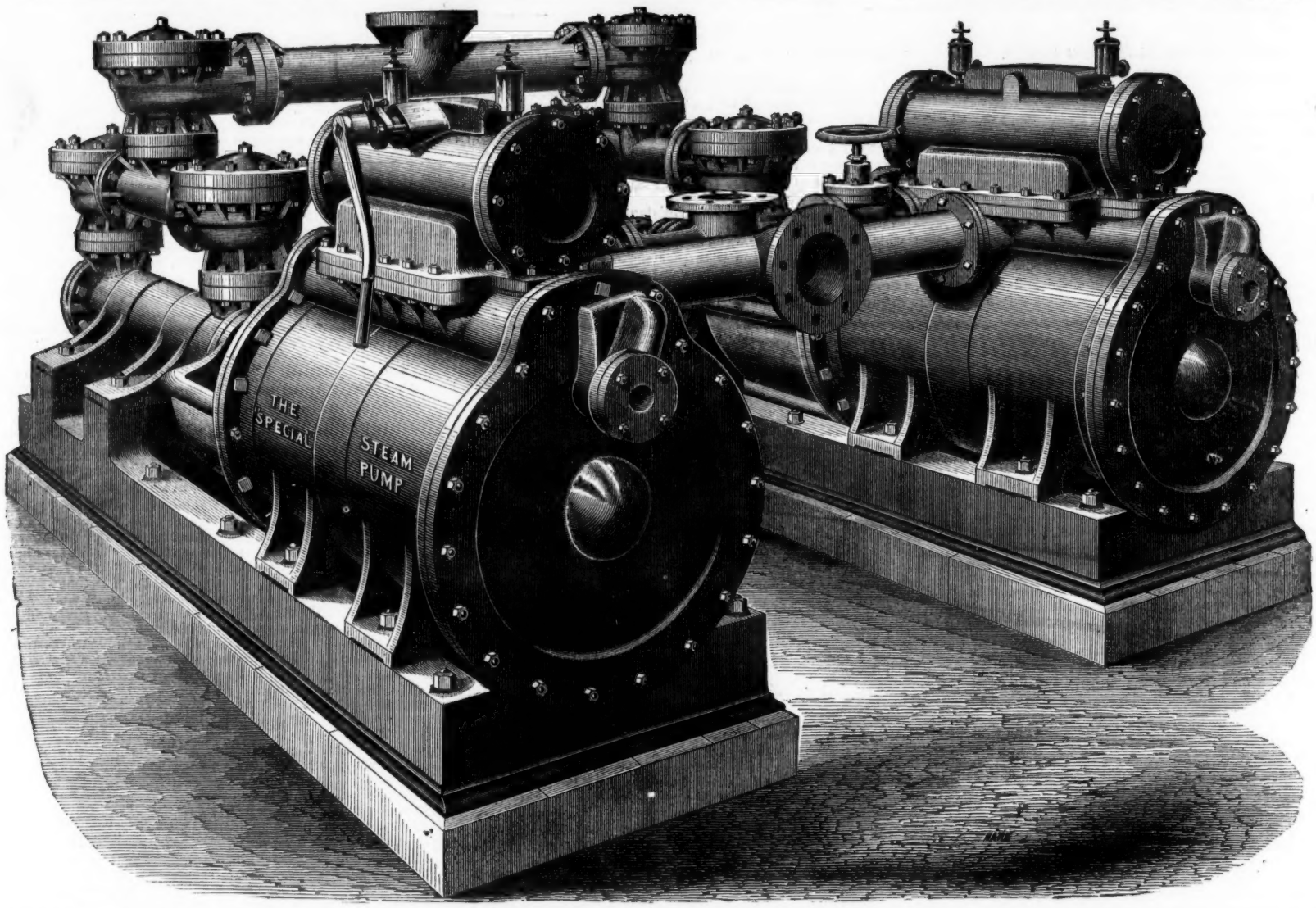
10, LAURENCE POUNTNEY LANE, LONDON, E.C.,

AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

THE "SPECIAL" DIRECT-ACTING STEAM PUMP.

OVER **12,000** IN USE IN **ENGLAND** AND AMERICA.

SUCCESSFULLY ADOPTED IN A LARGE NUMBER OF MINES IN THIS COUNTRY AND ABROAD.



PAIR OF THE "SPECIAL" DIRECT-ACTING STEAM PUMPS SUITABLE FOR HIGH LIFTS IN MINES, SIMILAR TO MANY SUPPLIED BY TANGYE BROTHERS AND HOLMAN.

The following extract from a letter, received by Tangye Brothers and Holman from J. Bigland, Esq., dated Feb. 25, 1875, refers to a "Special" Direct-acting Steam Pumping Engine supplied four years ago to Messrs. Joseph Pease and Partners, for the Adelaide Colliery, Bishop Auckland. The engine is throwing about 8000 gallons per hour, 1040 feet high, in one direct lift:—

"The underground pumping engine at Adelaide Colliery is working night and day. It does its work satisfactorily, and gives us very little trouble. Some of the cup leathers which form the plunger packing have worked three months. The working barrel is in beautiful condition. The average duration of the valve seats is about eight months: they work and keep tight as long as there is a bit of them left. I expect the valves (Holman's patent) and the buffers will last as long as the colliery."

Extract from a letter received by Tangye Brothers and Holman from W. H. Eagland, Esq., dated Feb. 27, 1875, in reference to a "Special" Direct-acting Steam Pumping Engine supplied two years ago to the West Yorkshire Iron and Coal Company near Leeds, to throw 16,000 gallons per hour, 465 feet high, in one direct lift:—

"It is at work night and day. Our man goes down to the pump twice a day (Ten A.M. and Four P.M.), to supply the tallow cups. After this it is left every day till he comes next morning, when he goes down again at Ten A.M. as before. The only repairs the pump has had for 12 months are one bucket, which had worked since we got the pump, and one valve seat, but no valve, so it has cost very little. Its first lift is 70 yards perpendicular, then the water passes up pipes for half a mile, ascending another 70 yards, and then another perpendicular pipe of 15 yards—total, 155 yards vertical height."

Extract from the Official Report of the Commission of the German Empire on the Vienna Exhibition of 1873, treating on Pumping Engines:—

"Contrary to these older pumping engines exhibited, there is now nearly everywhere the opinion established that the ('SPECIAL') pumping engines placed underground, which are made on A. S. Cameron's principle by Messrs. Tangye, are preferable to all. They do much duty combined with great compactness. They dispense entirely with the troublesome rod arrangement, giving often rise to stoppages, so that they will be applied shortly to a great extent, and are already in use in many localities. There is no doubt that this in every respect practical system will command a general adaptation."

200 SIZES AND COMBINATIONS OF THESE PUMPS ARE NOW MADE.

The following are a few of the Sizes for High Lifts in Mines:—

Diameter of Steam Cylinder .....In.	7	8	9	9	10	10	12	12	12	14	14	14	16	16	16	16	18	18	18	18	21	21	21
Ditto of Water Cylinder .....In.	3	3	3	4	3	4	3	4	5	4	5	6	4	5	6	7	5	6	7	8	5	6	7
Length of stroke .....In.	24	24	24	24	36	24	36	36	36	36	36	36	36	36	36	36	48	36	36	36	48	48	36
Gallons per hour approximate	1830	1830	1830	3250	1830	3250	1830	3250	5070	3250	5070	7330	3250	5070	7330	9750	5070	7330	9750	13,000	5070	7330	9750
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump	325	425	540	300	665	375	960	540	345	735	470	330	960	615	426	312	775	540	400	300	1058	740	540

CONTINUED.

Diameter of Steam Cylinder .....In.	21	21	21	24	24	24	24	24	26	26	26	26	26	30	30	30	30	30	32	32	32	32	32
Ditto of Water Cylinder .....In.	8	9	10	6	7	8	9	10	7	8	9	10	12	8	9	10	12	14	8	9	10	12	14
Length of stroke .....In.	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	9750	13,000	16,519	20,000	30,000	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump	413	326	264	960	700	540	427	345	827	633	500	405	282	840	665	540	375	275	960	758	625	426	313

PRICES OF ABOVE ON APPLICATION.—FOR SIZES AND PRICES OF PUMPS FOR LOWER LIFTS SEE SEPARATE LIST.

HOLMAN'S PATENT CONDENSER will be found a great acquisition to all kinds of Steam Pumps, as not only is the exhaust steam completely condensed, and the annoyance from same blowing off entirely got rid off, but a vacuum is obtained in the steam cylinder saving from 20 to 50 per cent. in fuel, and increasing to a considerable extent the economy and efficiency of the Pump.

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AN INDISPENSABLE APPENDAGE TO STEAM BOILERS.

MOSCOW, 1872.

In operation to upwards of 2,550,000 h.p.

VIENNA, 1873.

SAVES 20 to 25 per cent. of Fuel.

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MANUFACTURERS of every description of ROUND and FLAT ROPES of any length for COLLIERY, RAILWAY, AGRICULTURAL, SHIPPING, and other purposes, and guaranteed of the highest standard of strength.

Best Selected Charcoal Iron, Best Crucible Cast Steel, and extra strong Improved Steel Round and Flat Wire Ropes; Compound-laid non-rotating Flexible Ropes, in Iron or Steel for small gear and sinking purposes; Best Selected Charcoal Iron Guide Ropes; Galvanised and Plain Ropes for capstans, crabs, suspension bridges, canal towing, &c.; Patent Steel Plough Ropes; Galvanised Signal and Fencing Strands; Copper Rope Lightning Conductors; Steel, Iron, and Copper Sash Cords; Picture Cords; Russian, Italian, and Manilla Hemp Round and Flat Ropes; White and Tarred Hemp and Flax Spun Yarns; Round and Flat Rope Pulleys and Patent Springs for same; Galvanised Wire Rope for Ships' Standing Rigging; Russian, Italian, Manilla, and Coir Cordage; Towlines, Warps, Service and other Lines for Shipping Purposes; Ships' Rigging fitted by experienced workmen.

D., C., and S. beg to call special attention to the advantages to be derived by adopting their EXTRA STRONG IMPROVED STEEL ROPES, for lifting heavy loads in deep mines, also in hauling from long distances; a considerable reduction is effected in weight, friction materially reduced, and an extra amount of work got out of the rope—a rope 8 lbs. per fathom being equal in strength to an iron rope 20 lbs. per fathom, or an ordinary steel rope 12 lbs. per fathom.

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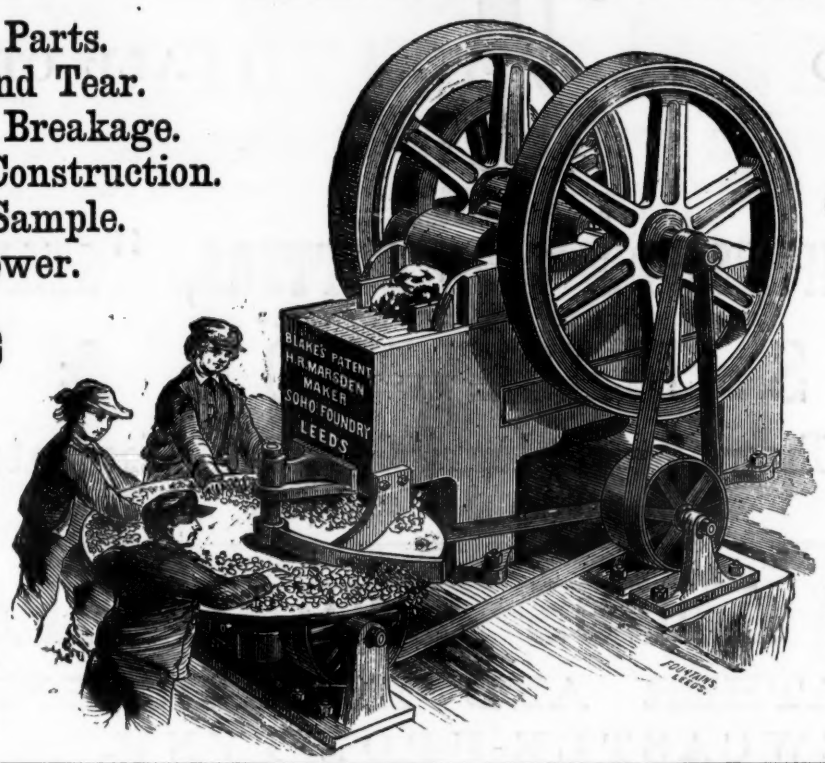

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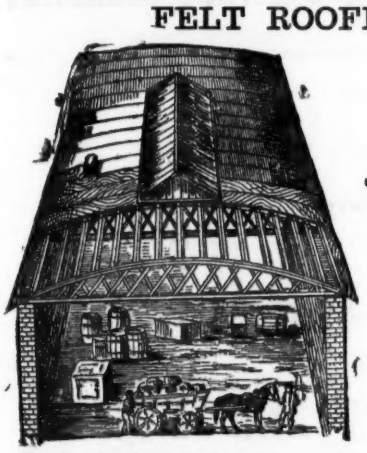

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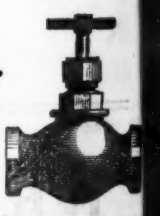
PRICES AND PARTICULARS ON APPLICATION.



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